

## RESEARCH ARTICLE

# Review of the *Pachyprotasis flavipes* group (Hymenoptera: Tenthredinidae) from China with descriptions of two new species

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<http://zoobank.org/81692349-2697-4BF9-B380-042309B0E257>

**ABSTRACT.** The *flavipes* group of *Pachyprotasis* Hartig, 1837, with twenty-four species recognized in China, is reviewed. This number includes two newly described species, *Pachyprotasis rufodorsata* **sp. nov.**, from Sichuan, Hubei, Ningxia, and Shaanxi provinces, and *Pachyprotasis nigratarsalia* **sp. nov.**, from Hunan province. The mesopleuron and metapleuron of the two new species are reddish-brown, distinguishing them from other similar species of the *P. flavipes* group. Thirty-four species of this group have been recorded from China, one species (*P. variegata* Fallén, 1808) was found to be widespread throughout Europe and Siberia, twenty-four were originally described from the China and Burma-Yunnan frontier, eleven from India, and five from Japan. A key to the species of this group from China is provided.

**KEY WORDS.** Sawflies, taxonomy, Tenthredininae, Tenthredinoidea.

## INTRODUCTION

*Pachyprotasis* Hartig, 1837 is chiefly distributed in the Palaearctic and north of the Oriental regions. More than 220 species of *Pachyprotasis* have been recognized (Zhong et al. 2018). Zhong and Wei (2010) provided a key to separate the *P. flavipes* group from other species groups of *Pachyprotasis*.

Species of the *P. flavipes* and *P. indica* groups share red maculae on hind legs, but those of the latter group can be separated from the species of the former, according to Zhong and Wei (2010), by the abdomen red or with red spot. In this study, two new species of the *P. flavipes* group, namely *P. rufodorsata* **sp. nov.** and *P. nigratarsalia* **sp. nov.**, collected from Sichuan, Hunan, Hubei, Ningxia, and Shaanxi provinces in China, are described. Both new species have red maculae on the thorax, making them easy to distinguish from other species of the group. A key to all species from China is provided.

## MATERIAL AND METHODS

Sixty-two specimens of the newly described species were obtained by sweeping in forest fringe zones in Hubei, Hunan, Ningxia, Shaanxi, and Sichuan provinces from China. In addition, 1,646 specimens from China and three specimens from Europe of known species were examined and studied for this work. These specimens were examined with a Motic DM-143 stereomicroscope. Images of the adult body were taken with a Keyence VHX-5000 digital camera. Images of genitalia were taken with a Nikon NI-SSR digital camera. All images were further processed with Adobe Photoshop CS 11.0.

Terminology of sawfly genitalia follows Ross (1945), Viitasaari (2002), and Zhong and Wei (2012), whereas wing venation follows Zhong and Wei (2012). For each species, the distribution is presented on a map based on materials we studied or on data given in the bibliographic references. The distribution maps were prepared using Arcview-GIS 3.3.

The holotype and paratypes of the two new species are deposited in the Asian Sawfly Museum, Nanchang, China (ASMN). Some paratypes are also deposited in the Scientific Research and Management Center of East China Pharmaceutical Botanical Garden, Lishui, Zhejiang, China (formerly Lishui Academy of Forestry, LSAF).

## TAXONOMY

### Hymenoptera

### Tenthredinidae

### *Pachyprotasis* Hartig, 1837

Type species: *Pachyprotasis rapae* (Linnaeus, 1767).

### *Pachyprotasis flavipes* species group

Diagnosis. Species of this group can be recognized by the following combination of morphological characters: hind legs more or less red, reddish-brown, or reddish-yellow (in the male, sometimes only traces of these colors at the base of tibiae or apex of femora); head and thorax sometimes marked with red; abdomen black or white, but never with a red macula.

#### Key to species of the *Pachyprotasis flavipes* group

1. Hind tarsi black, the apical joints sometimes with white or red macula..... 2
- 1'. Hind tarsi white or reddish-brown, the apical joints sometimes black..... 11
2. Mesopleuron and metapleuron reddish-brown..... 3
- 2'. Mesopleuron and metapleuron black or yellowish-white, without red macula ..... 4
3. Mesoscutum reddish-brown; lower part of mesopleuron with broad white band; antennomere 1 longer than antennomere 2 ..... China (Sichuan, Hubei, Ningxia, Shaanxi).....*P. rufodorsata* sp. nov.
- 3'. Mesoscutum black; lower part of mesopleuron without white band; antennomere 1 shorter than antennomere 2. China (Hunan) .....*P. nigritarsalia* sp. nov.
4. Mesepisternum white, lower part sometimes with narrow black band, or mesepisternum black, lower part with broad horizontal white band that is not narrower than 1/4 of mesepisternum ..... 5
- 4'. Mesepisternum black, anterior part sometimes with white spot, or lower part with narrow horizontal white band that is not broader than 1/4 of mesepisternum ..... 8
5. Mesepisternum black, lower part with broad horizontal white band ..... 6
- 5'. Mesepisternum white, lower part with a narrow and short black band. China (Tibet), India, Nepal .....*P. citrinipicta* Malaise, 1945
6. Hind femur red or black without white, sometimes the extreme base, adjacent to the white trochanters, also a little white ..... 7
- 6'. Basal half of hind femur white, apical half reddish-brown; dorsal part of head polished, microsculpture absent or indistinct, punctures sparse. China (Fujian, Hunan, Shaanxi, Zhejiang) ..... *P. wui* Wei & Nie, 1998
7. Punctures on mesopleuron deep, distinct; lateral part of median mesoscutal lobe yellowish-white; all of laterotergites yellowish-white. China (Gansu), Japan, Mongolia, Europe, Siberia.....*P. variegata* (Fallén, 1808)
- 7'. Punctures on mesopleuron shallow, indistinct; apex of median mesoscutal lobe yellowish-white; lateroterga yellowish-white only at extreme edge. China (Tibet, Yunnan), Burma..... *P. corallipes* Malaise, 1945
8. Basal half or at least third of hind femur white; mesopleuron black, without white macula..... 9
- 8'. Hind femur reddish-brown, without white macula; lower part of mesopleuron with white spot. China (Gansu) .....*P. sanguinipes* Malaise, 1931
9. Terga black, without distinct white spot ..... 10
- 9'. Central part of each tergum with a large triangular white spot. China (Gansu, Guizhou, Henan, Hunan, Sichuan, Yunnan).....*P. zuoae* Wei, 2005
10. Basal 1/2 of metafemur striped with black on outer side; base of each serrula distinctly elevated. China (Guizhou, Henan, Hunan, Hubei, Shaanxi)..*P. parasubtilis* Wei, 1998
- 10'. Metafemur striped with black along the entire length on outer side; base of each serrula indistinctly elevated. China (Henan, Hubei, Shaanxi, Sichuan).....*P. lineatifemorata* Wei & Nie, 1999
11. Mesepisternum yellowish-white, lower part sometimes with narrow black band, or mesepisternum black, lower part with broad horizontal white band that is not narrower than 1/4 of mesepisternum..... 12
- 11'. Mesepisternum black, anterior part sometimes with white spot, or lower part with narrow horizontal white band that is not broader than 1/4 of mesepisternum ..... 15
12. Lower part of mesepisternum white, without black; metacoxa and metafemur without black stripes ..... 13
- 12'. Lower part of mesepisternum with a narrow and short black band; outer side of metacoxa and metafemur with black stripes. China (Yunnan) .....*P. zhengi* Wei & Zhong, 2006
13. Basal third of metafemur yellowish-white; upper part of mesopleuron black, lower part yellowish-white; occiput black ..... 14
- 13'. Basal two-thirds of metafemur yellowish-white; mesopleuron yellowish-white, without black; occiput yellowish-white. China (Tibet), India.....*P. subtilissima* Malaise, 1945
14. Labrum with squarely pointed anterior margin; hind tarsomeres 2–5 yellowish-white; central part of each tergum with a yellowish-white short-triangular spot. China (Sichuan, Tibet) .....*P. flavipes* (Cameron, 1902)
- 14'. Labrum with acutely pointed anterior margin; hind tarsus reddish-brown, without yellowish-white; central part of each tergum with a yellowish-brown long-triangular spot. China (Gansu, Henan, Hubei, Shaanxi) .....*P. acutilabria* Wei, 1998
15. Punctures on mesepisternum rough and irregular, surface between punctures opaque ..... 16
- 15'. Punctures on mesepisternum smooth and regular, surface between punctures polished ..... 17

16. Clypeus and labrum white, without black; lower part of inner orbit white, upper part black; metacoxa reddish-brown, outer side with a large white spot; hind tarsus white, basal 1/3 of tarsomere 1 and apex of tarsomere 5 black. China (Sichuan, Yunnan).....*P. rufinigripes* Wei & Nie, 1998
- 16'. Clypeus and labrum with black spots; inner orbit white, without black; metacoxa black or reddish-brown, without white spot; hind tarsus reddish-brown. China (Sichuan, Yunnan), Burma, India.....*P. maesta* Malaise, 1934
17. Space on dorsal part of head rough, microsculpture indistinct; center of frontal area concave, frontal ridges acute.. 18
- 17'. Space on dorsal part of head polished, microsculpture absent; center of frontal area not concave, frontal ridges rounded; body length 11.0–12.0 mm; clypeus yellowish-white, without black spot; center of each tergum with a distinct white triangular spot. China (Anhui, Fujian, Guizhou, Hunan) .....*P. xanthotarsalia* Wei & Nie, 2003
18. Metacoxa reddish-brown, sometimes with black spot, but never with white stripe ..... 19
- 18'. Metacoxa yellowish-white, ventral side sometimes with black stripe ..... 20
19. Hind tarsus reddish-brown, basal third of tarsomere 1 and apex of tarsomere 5 black; center of clypeus and labrum reddish-brown. China (Henan, Hunan, Shaanxi, Sichuan, Yunnan)..... *P. shengi* Wei & Nie, 1999
- 19'. Hind tarsus yellowish-white, basal half of tarsomere 1 black; clypeus and labrum white, without red macula. China (Guizhou, Henan, Shaanxi, Sichuan, Burma-Yunnan frontier); India ..... *P. subtilis* Malaise, 1945
20. Punctures on mesopleuron shallow and minute, space between punctures polished, microsculpture absent or indistinct; apex of terga 4–6 each with a distinct white triangular spot ..... 21
- 20'. Punctures on mesopleuron deep and large, space between punctures rough, microsculpture distinct; terga black, without distinct white spot. China (Anhui, Fujian, Guizhou, Guangdong, Guangxi, Henan, Hubei, Hunan, Shaanxi, Zhejiang, Burma-Yunnan frontier), India..... *P. subulicornis* Malaise, 1945
21. Clypeus and labrum white, without black macula..... 22
- 21'. Anterior margin and center of clypeus blackish-brown, center of labrum blackish-brown. China (Hunan, Zhejiang).....*P. longipetiolata* Zhong, Li & Wei, 2018
22. Mesepisternum black, without white ..... 23
- 22'. Ventral part of mesepisternum white, anterior part sometimes with white spot. China (Anhui, Gansu, Guizhou, Henan, Hunan, Zhejiang) *P. henanica* Wei & Zhong, 2002
23. Basal tenth of metafemur yellowish-white; punctures on mesepisternum absent, or extremely minute, shallow. China (Henan) ..... *P. weni* Wei, 1998
- 23'. Basal fourth of metafemur yellowish-white; punctures on mesepisternum moderate. China (Henan) ..... *P. magnilabria* Wei, 1998

### *Pachyprotasis corallipes* Malaise, 1945

Figs 1–10

*Pachyprotasis corallipes* Malaise, 1945: 151–152.

*Pachyprotasis corallipes*: Saini, 2007: 79, figs 161, 164, 168, 176.

Diagnosis. Female. Body length 6 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesopleuron black, lower part with broad white horizontal band, central part white; metafemur reddish-brown, without black macula, metatibia reddish-brown, apical 1/8 black; punctures on mesepisternum shallow and minute, indistinct; postocellar area with median furrow, broader than long by 2:1; serrulae flat, base of each serrula not elevated.

Male. Unknown.

Non-type material. 1♀, China, Yunnan province, Zhongdian, 27°50'N, 99°40'E, alt. 2600 m, 9-VI-1996, Leyi Zheng leg. (ASMN).

Distribution. China (Tibet, Yunnan), Myanmar.

### *Pachyprotasis variegata* (Fallén, 1808)

Figs 11–28

*Tenthredo variegata* Fallén, 1808: 99–100.

*Pachyprotasis variegata*: Cameron, 1882: 125; Costa, 1894: 178–179; Enslin, 1917: 134–135; Malaise, 1931: 134–135; Berland, 1947: 155–156; Mucche, 1967: 9; Scobiola-Palade, 1978: 199–200, fig. 200; Vassilev, 1978: 92–93; Zhelochovtsev, 1993: 342–343; Lee et al., 2000: 172, figs 203, 211; Magis, 2008: 102.

Diagnosis. Female (Figs 11–20). Body length 9 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesopleuron white, upper corner black, lower part with broad black horizontal band; lateral part of median mesoscutal lobe white; all of laterotergite white; metacoxa and metatrochanter white, metafemur and metatibia reddish-brown, basal 1/5 of metafemur white, apical 1/5 black; punctures on mesepisternum deep and large.

Male (Figs 21–28). Body length 8 mm. Color and structure similar to female, except: V-spot on median mesoscutal lobe narrower; posterior part of terga 1–8 each with a medial triangular white spot; ventral side of each coxa with irregular black spot; antennomeres strongly compressed.

Variation. Body length of female 8–9 mm.

Non-type material. 2♀, 1♂, Salzburg Gro Bortltal Hutlschlag. ZW. Karteis U. Muhlegg, 1050–1280 m, 29. V.1992., coll. Neumayer Johann (ASMN).

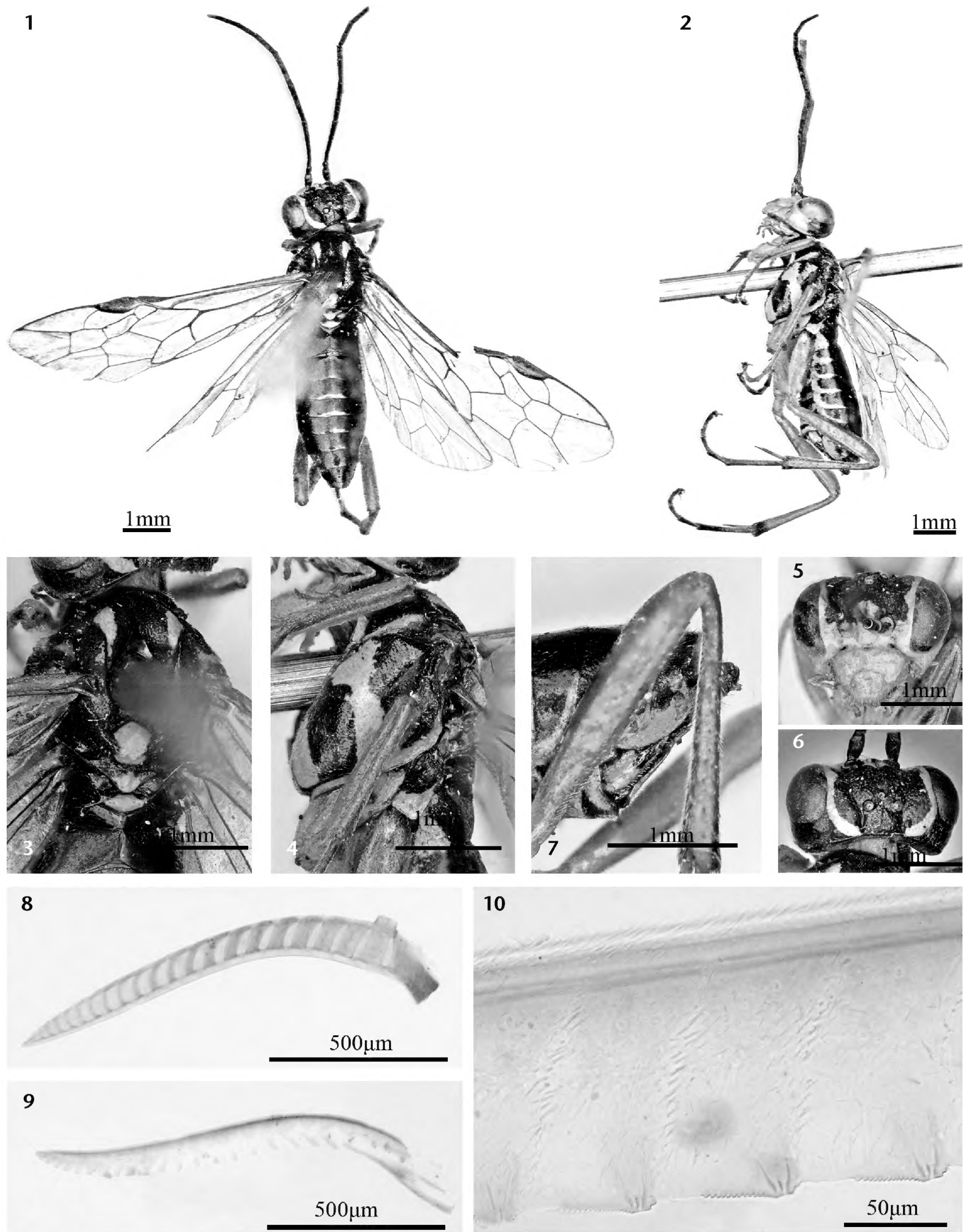
Distribution. North of China (Gansu), Japan, Mongolia, most countries of Europe, Siberia.

### *Pachyprotasis sanguinipes* Malaise, 1931

*Pachyprotasis sanguinipes* Malaise, 1931: 128–128; Malaise 1945: 152; Saini, 2007: 80–81, figs 161, 164, 168, 176.

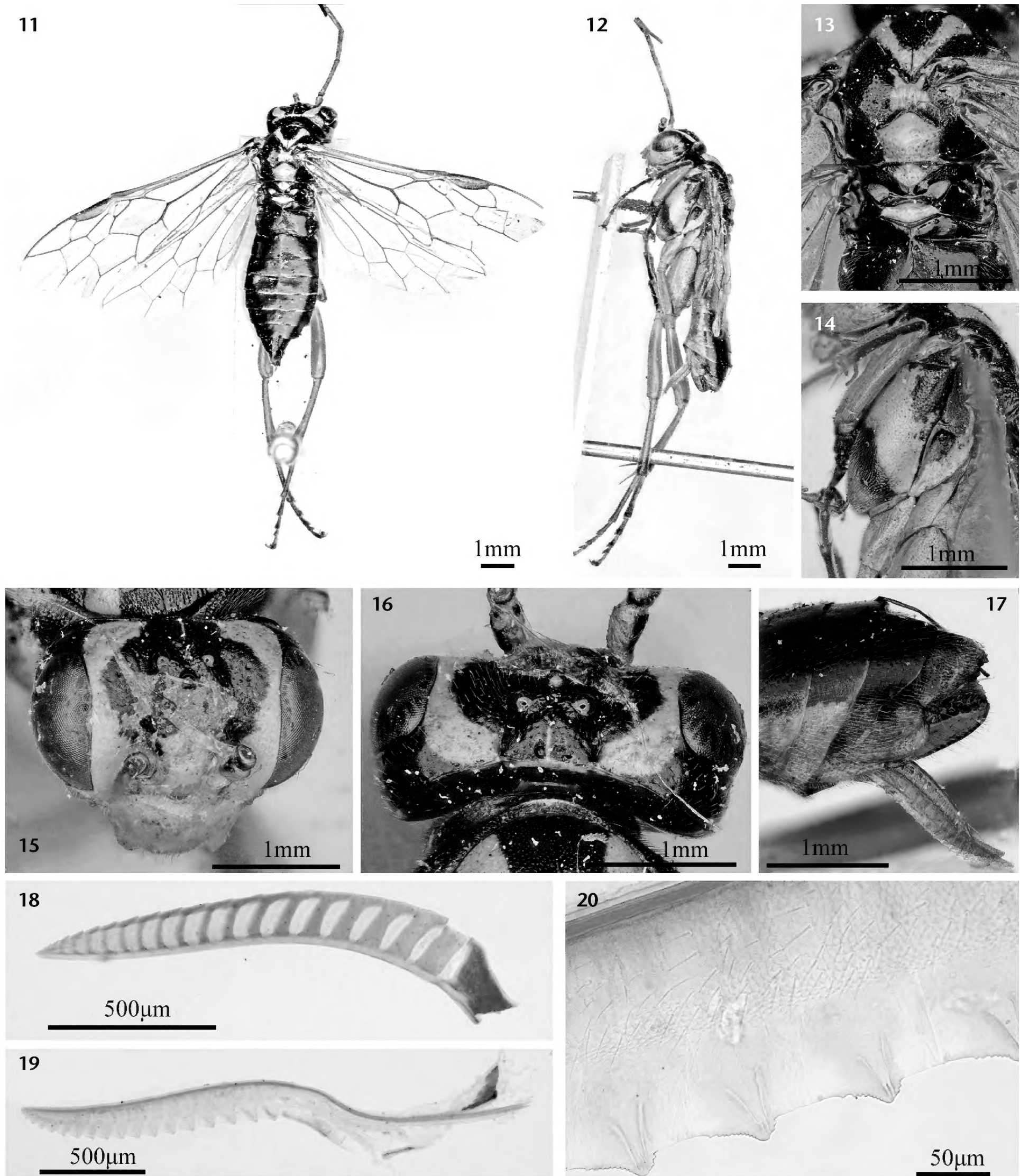
Diagnosis. Female. Body length 9.5 mm. Body black, with yellowish-white pattern as follows: face below antennal socket, narrow inner orbit connected to a spot on temple, lateral sides of median mesoscutal lobe, spot on mesoscutellum, mesoscutellar appendage, metascutellum, horizontal band on lower part of mesopleuron, center of mesopleuron and metapleuron, spot on central part of each tergum; legs reddish-brown, apex of metatibial, metatarsus black; punctures on mesepisternum large, distinct; frontal area flat, frontal ridges rounded.



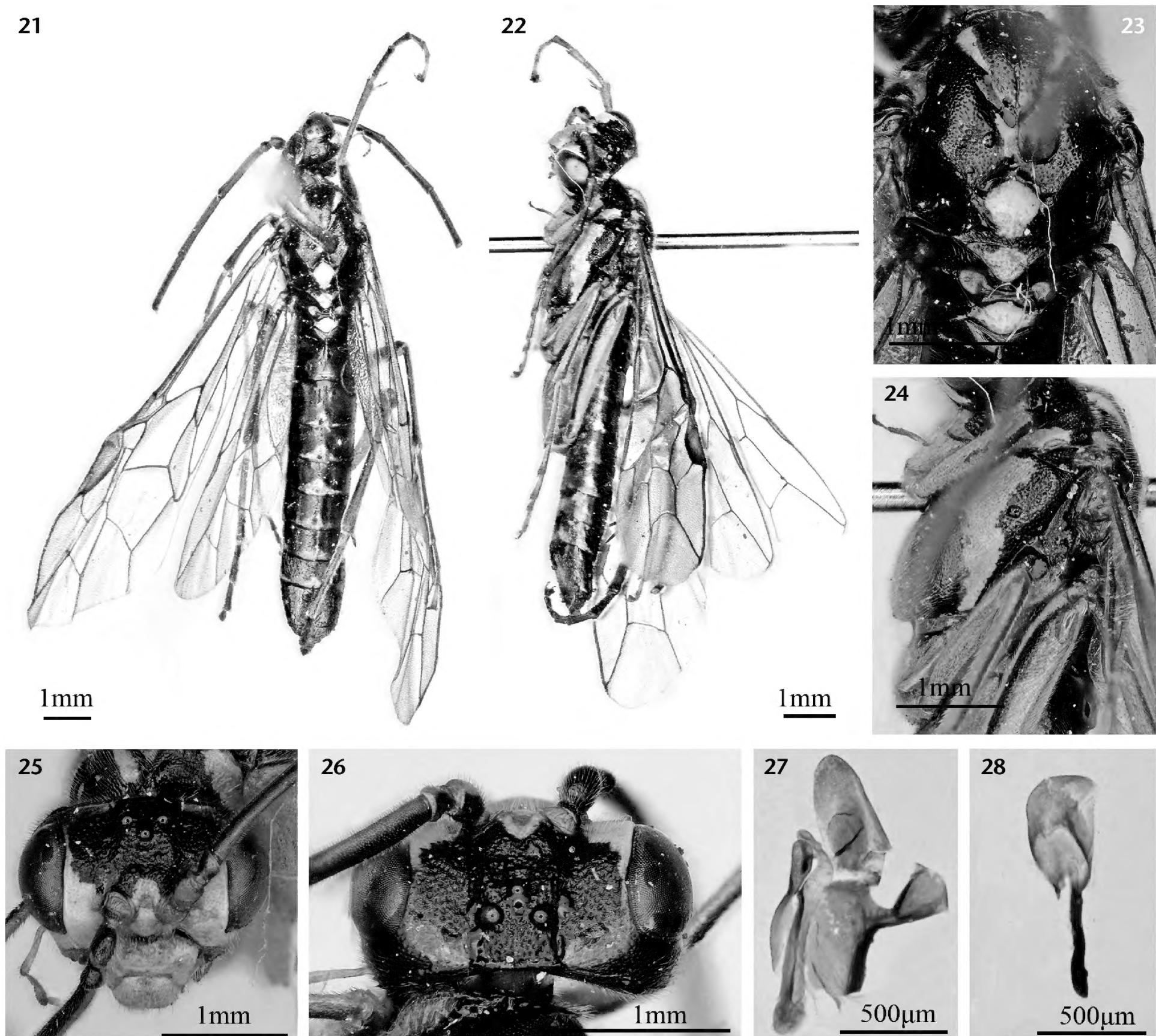


Figures 1–10. *Pachyprotasis corallipes*, female: (1) dorsal view; (2) lateral view; (3) mesonotum and metanotum, dorsal view; (4) mesopleuron and metapleuron, lateral view; (5) head, frontal view; (6) head, dorsal view; (7) ovipositor sheath, lateral view; (8) lance; (9) lancet; (10) middle serrulae of lancet.





Figures 11–20. *Pachyprotasis variegata*, female: (11) dorsal view; (12) lateral view; (13) mesonotum and metanotum, dorsal view; (14) mesopleuron and metapleuron, lateral view; (15) head, frontal view; (16) head, dorsal view; (17) ovipositor sheath, lateral view; (18) lance; (19) lancet; (20) middle serrulae of lancet.



Figures 21–28. *Pachyprotasis variegata*, male: (21) dorsal view; (22) lateral view; (23) mesonotum and metanotum, dorsal view; (24) mesopleuron and metapleuron, lateral view; (25) head, frontal view; (26) head, dorsal view; (27) harpe and parapenis; (28) penis valve.

Male. Unknown.

See Malaise (1945) for description.

Distribution. China (Gansu).

### *Pachyprotasis wui* Wei & Nie, 1998

Figs 29–46

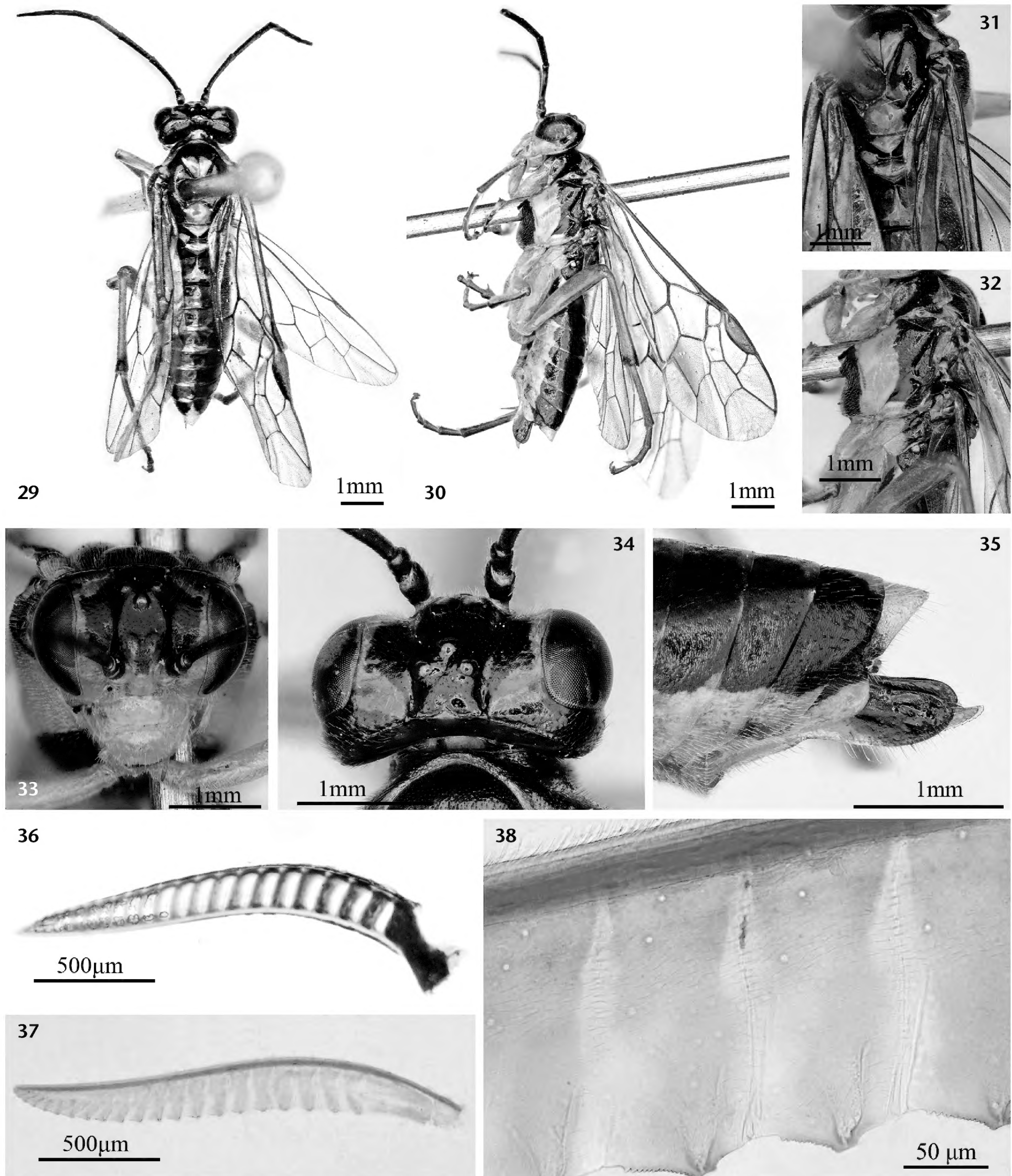
*Pachyprotasis wui* Wei & Nie, 1998b: 372, fig. 372.

Diagnosis. Female (Figs 29–38). Body length 9.5 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesopleuron black,

lower part with broad horizontal white band; apex of median mesoscutal lobe white, each tergum with a triangular white spot on posterior part; punctures on mesepisternum shallow, minute and sparse; metacoxa, metatrochanter and basal 5/9 of metafemur white, apical 4/9 of metafemur and basal 4/5 of metatibia reddish-brown, metatarsus and apical 1/5 of metatibia black.

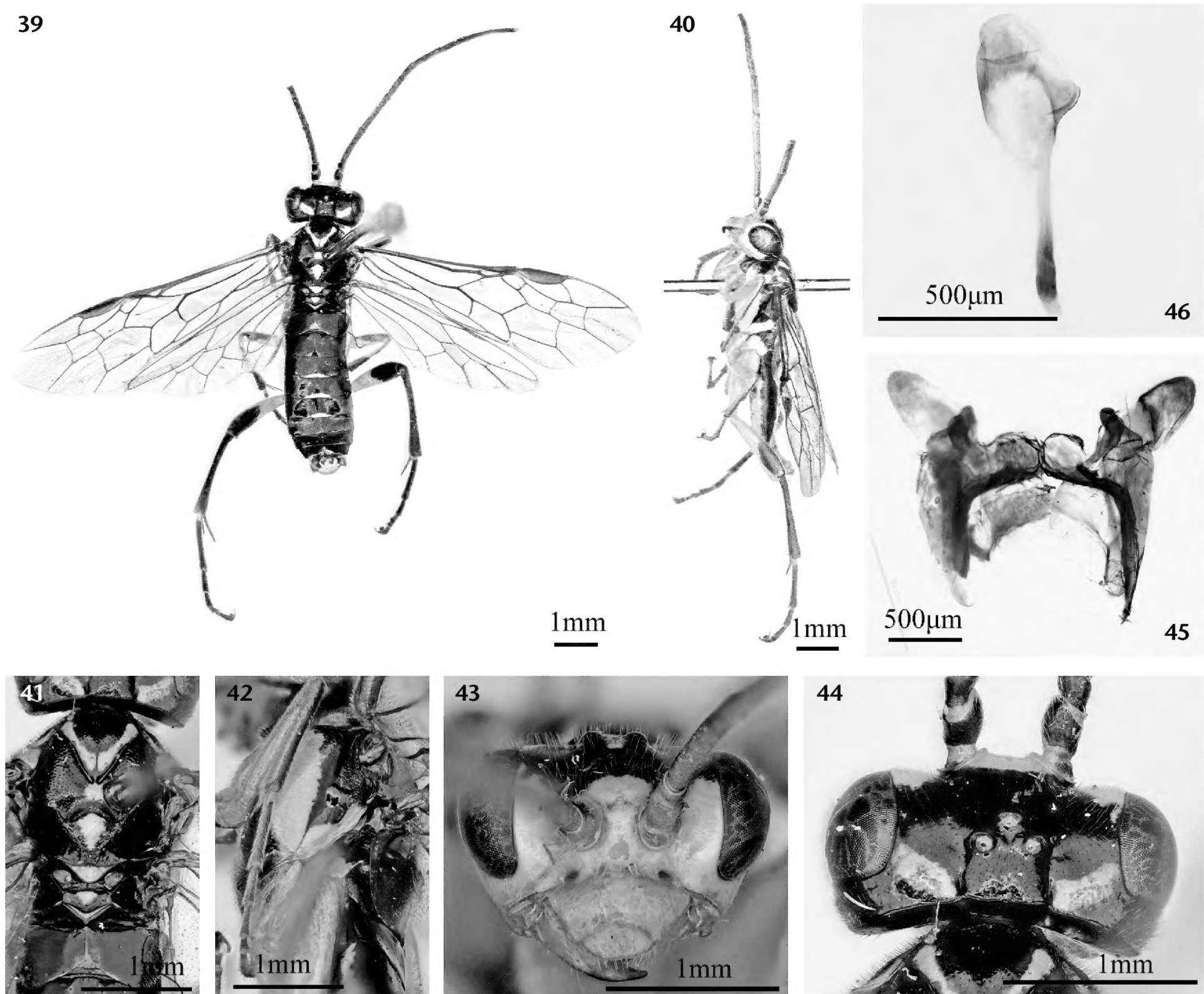
Male (Figs 39–46). Body length 6.5 mm. Color and structure similar to female, except: median mesoscutal lobe only white on apex; central part of mesepisternum with white spot; hind legs white, without red macula, apical 2/5 of metafemur, metatibia, metatarsus black; antennomeres strongly compressed.





Figures 29–38. *Pachyprotasis wui*, female: (29) dorsal view; (30) lateral view; (31) mesonotum and metanotum, dorsal view; (32) mesopleuron and metapleuron, lateral view; (33) head, frontal view; (34) head, dorsal view; (35) ovipositor sheath, lateral view; (36) lance; (37) lancet; (38) middle serrulae of lancet.





Figures 39–46. *Pachyprotasis wui*, male: (39) dorsal view; (40) adult male, lateral view; (41) mesonotum and metanotum, dorsal view; (42) mesopleuron and metapleuron, lateral view; (43) head, frontal view; (44) head, dorsal view; (45) harpe and parapenis; (46) penis valve.

Variation. Body length of female 9.0–9.5 mm and male 6.5–7.0 mm.

Distribution. China (Fujian, Jiangxi, Hunan, Shaanxi, Zhejiang).

Type material. Holotype, ♀, China, Zhejiang province, Anji, Mt. Longwang, 30°24'N, 119°26'E, 14-V-1999, Hong WU leg (SMN).

Non-type material. 3♀, China, Zhejiang province, Lin'an District, Mt. Qingliangfeng, Longtang, 30°07'N, 118°54'E, alt. 930 m, 14-V-1999, Wei XIAO & Zejian LI leg.; 2♀, China, Fujian province, Mt. Wuyi, Guadun, 27°39'N, 117°57'E, alt. 1000–1500 m, 18-V-2004, Hu ZHOU leg.; 1♀, China, Fujian province, Mt. Wuyi, Moshikeng, 27°39'N, 117°57'E, alt. 900–1100 m, 11-V-2004, Shaobing ZHANG leg.; 1♀, China, Hunan province,

Yanling, Taoyuandong, 26°29'N, 114°02'E, alt. 900–1000 m, 23-IV-1990, Wei XIAO leg.; 1♀, China, Hunan province, Yanling, Taoyuandong, 26°29'N, 114°02'E, alt. 900–1000 m, 20-V-1995, Boyi ZHENG leg.; 1♀, China, Hunan province, Lianyuan, Mt. Longshan, 27°30'N, 111°44'E, 11-V-1999, Wei XIAO leg.; 3♀, China, Hunan province, Shimen, Mt. Huping, 30°07'N, 110°48'E, 30-IV-2000, Yihai ZHONG & Zhangqiang YOU leg.; 1♀, China, Hunan province, Sangzhi, Mt. Badagong, 29°40'N, 109°44'E, 30-IV-2000, Wei XIAO leg.; 3♀, China, Hunan province, Suining, Huangsang, 26°26'N, 110°04'E, alt. 900–1000 m, 21–22-IV-2005, Shaobing ZHANG leg.; 2♀, China, Hunan province, Yizhang, Mt. Mangshan, 24°26'N, 112°55'E, alt. 1000 m, 15-IV-2003, Shaobing ZHANG & Wei XIAO leg.; 2♀, China, Hunan province, Yongzhou, Mt. Yangming, 26°04'N, 111°56'E, alt. 900–1200

m, 25–28-IV-2004, Yingke HE & Hu ZHOU leg.; 1♀2♂, China, Hunan province, Hengshan, Mt. Heng, Nantianmen, 27°16'N, 112°42'E, alt. 1050–1100 m, 10–11-IV-2004, Weixing LIU leg.; 1♀, China, Hunan province, Hengshan, Mt. Heng, Banshanting, 27°16'N, 112°42'E, alt. 700 m, 9-IV-2004, Weixing LIU leg.; 2♀, China, Hunan province, Liuyang, Mt. Dawei, Chunquiao, 28°25'N, 114°06'E, alt. 1300 m, 5-V-2010, Zejian LI & Mingcan YAO leg.; 2♀, China, Hunan province, Wugang, Mt. Yun, Yunfengge, 26°38'N, 110°37'E, alt. 1170 m, 10–18-IV-2010, Xiaohua WANG & Yanxia LIU leg.; 3♀, China, Hunan province, Wugang, Mt. Yun, Yunfengge, 26°38'N, 110°37'E, alt. 1170 m, 14–16-IV-2003, Zejian LI leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, 26°38'N, 110°37'E, alt. 950 m, 14-IV-2010, Xiaohua WANG & Yanxia LIU leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, Lanchuiyan, 26°38'N, 110°37'E, alt. 850 m, 13-IV-2010, Yanxia LIU leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, Temple Shengli, 26°38'N, 110°37'E, alt. 1145 m, 9-IV-2012, Zejian LI leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, TV Tower, 26°38'N, 110°37'E, alt. 1380 m, 13-IV-2012, Zejian LI leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, TV Tower, 26°38'N, 110°37'E, alt. 1380 m, 14-IV-2011, Zejian LI & Li WEI leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, Yunfengge, 26°38'N, 110°37'E, alt. 1170 m, 10-IV-2013, Zejian LI leg.; 1♀, China, Shaanxi province, Foping, Daguping, 33°32'N, 107°49'E, alt. 1320 m, 28-IV-2006, Mojun HE leg.; 1♀, China, Shaanxi province, Foping, Yueba, 33°32'N, 107°49'E, alt. 1085 m, 29-IV-2009, Mojun HE leg.; 1♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 405 m, 25-IV-2018, Zejian LI et. leg.; 9♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 405 m, 5–6-IV-2018, Zejian LI et. leg.; 2♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 10–12-IV-2015, Zejian LI leg.; 1♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 14-IV-2016, Zejian LI et. leg.; 6♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 405 m, 13–17-IV-2017, Mengmeng LIU leg.; 3♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Kanshanlaodian, 30°19'N, 119°26'E, alt. 1106 m, 14–18-IV-2017, Mengmeng LIU et. leg.; 1♀, China, Zhejiang province, Longquan, Mt. fengyang, Village Shatian, 27°55'N, 119°11'E, alt. 756 m, 20-IV-2017, Zejian LI et. leg.; 1♀, China, Zhejiang province, Lishui, Wetland Jiulong, Village Xinting, 28°24'N, 119°51'E, alt. 50 m, 31-III-2018, Zejian LI et. leg.; 13♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 405 m, 20-IV-2018, Zejian LI et. leg.; 1♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Xianrending, 30°21'N, 119°25'E, alt. 1506 m, 11-V-2018, Zejian LI & Mengmeng LIU leg.; 3♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 7–8-IV-2019, Zejian LI & Xiufang LI leg.; 3♀, China, Jiangxi province, Pingxiang, Mt. Wugong, Hongyangu, 27°29'N, 114°08'E, alt. 580 m, 3-IV-2016, Maoling

SHENG & Tao LI leg.; 3♀, China, Jiangxi province, Yichun, Mt. Guan, Station Donghe, 28°32'N, 116°36'E, 4-IV-2016, Fuping FANG leg. (ASMN, LSAF).

### *Pachyprotasis citrinipicta* Malaise, 1945

Figs 47–64

*Pachyprotasis citrinipictus* [recte: *citrinipicta*] Malaise, 1945: 148–149; Huang & Zhou, 1982: 341, fig. 346; Saini & Kalia, 1989: 153, 161, figs 145, 155, 166, 176; Saini, 2007: 73, figs 159, 163, 168, 175, 180, 202; Xiao et al. 1992: 109, figs 215, 219.

**Diagnosis.** Female (Figs 47–56). Body length 9.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: ventral part of body yellowish-white, lower part of mesepisternum with narrow and short black horizontal band, dorsal part of body black, lateral part of median mesoscutal lobe with broad yellowish-white “V” spot; terga without distinct white spot, deflexed lateral sides yellowish-white; punctures on mesepisternum large, deep and distinct; mesoscutellum prismatically elevated, lateral carina acute.

**Male** (Figs 57–64). Male. Body length 7.5 mm. Color and structure similar to female, except: median mesoscutal lobe yellowish-white only on apex; mesepisternum white, upper corner black, lower part with a broad black band, metapleuron black, posterior part yellowish-white; ventral side of metacoxa with a large black spot, outer part of metacoxa and metafemur with black lines; mesoscutellum flat; antennomeres strongly compressed.

**Variation.** Body length of female 8.5–10.0 mm and male 7.5–8.0 mm.

**Distribution.** China (Tibet), India, Nepal.

**Non-type material.** 1♀, 1♂, China, Tibet Autonomous Region, Yadong, 27°28'N, 88°54'E, 6–8-VI-1997, Jianyi WU leg.; 1♂, China, Tibet Autonomous Region, Motuo, Gedang, 29°48'N, 95°41'E, alt. 2100 m, 2-VI-1980, Jianyi WU leg.; 1♀, China, Tibet Autonomous Region, Nala, 29°48'N, 95°41'E, 27-VI-1997, Yintao JIN & Jianyi WU leg. (ASMN).

### *Pachyprotasis rufodorsata* sp. nov.

Figs 65–82

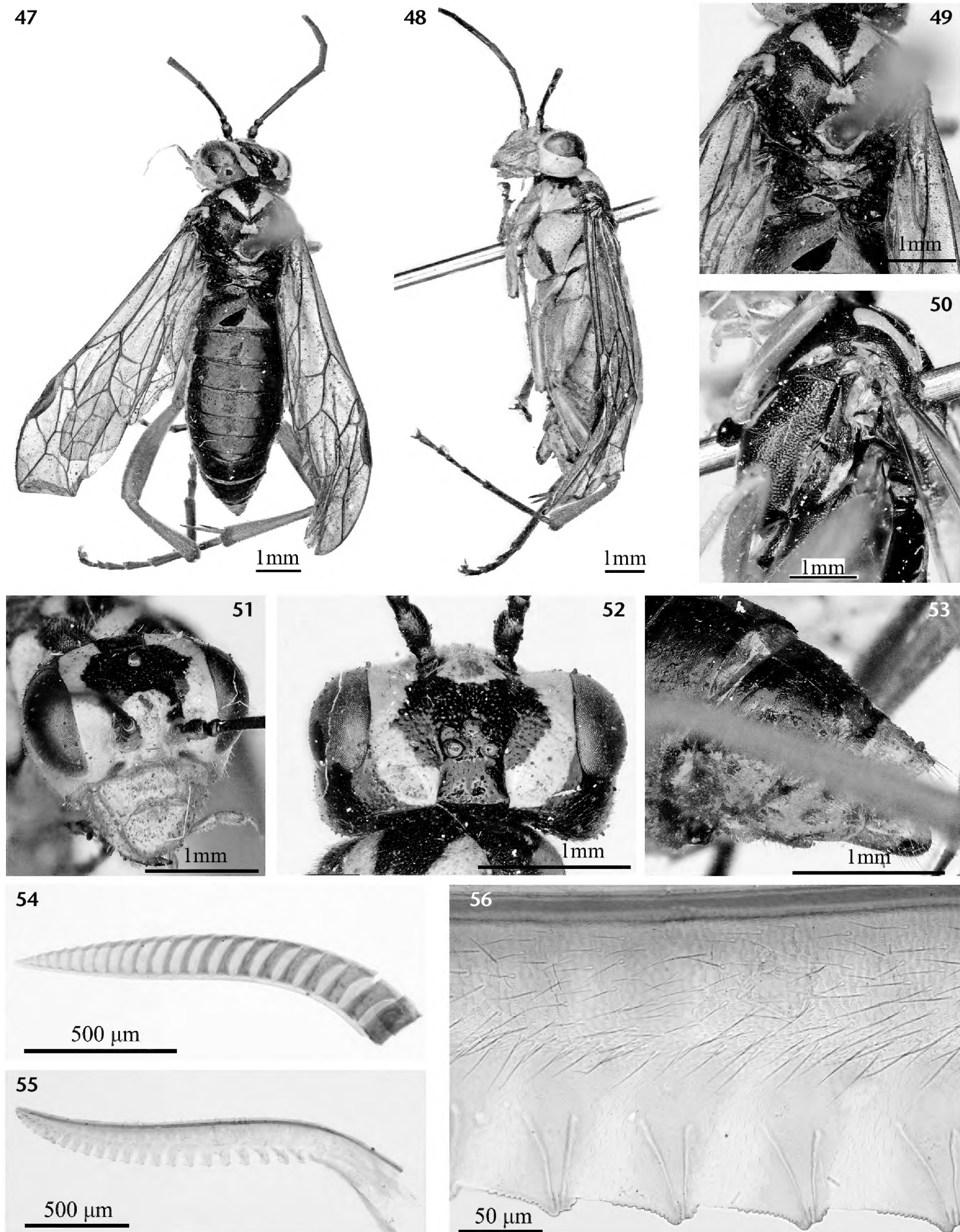
<http://zoobank.org/0A54F861-B0ED-48F4-A919-BF29E901B502>

**Type locality.** China: Hubei, Ningxia, Shaanxi, Sichuan.

**Diagnosis.** This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: median and lateral mesoscutal lobe reddish-brown, mesoscutellum reddish-brown, lateral part white, mesepisternum reddish-brown, upper corner white, lower part with a white horizontal band.

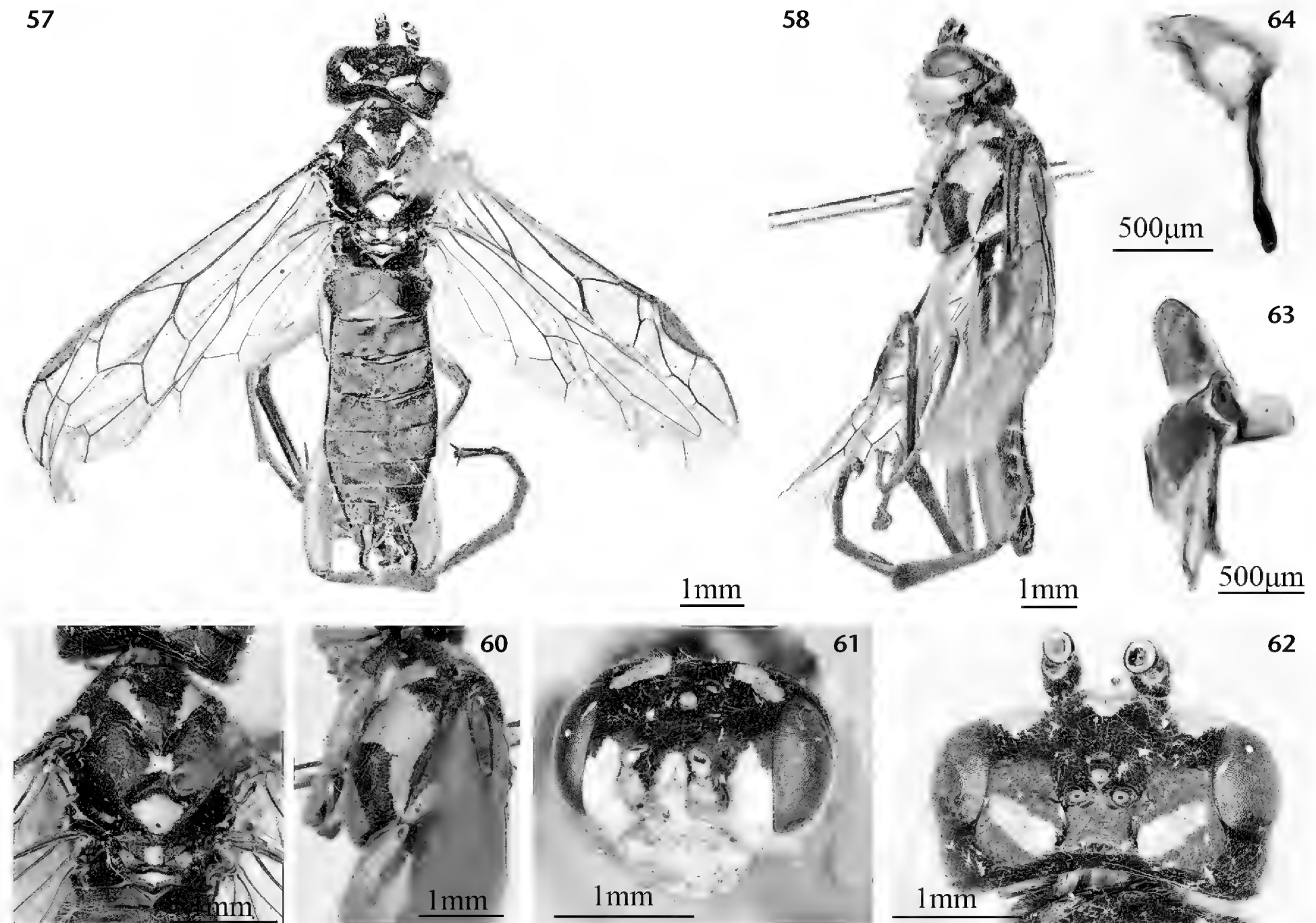
**Description.** Holotype female (Figs 65–68). Body length 8.5 mm. Body black, with white pattern as follows: labrum, clypeus, supraclypeal area, lower 1/4 of inner orbit continuous with lower 1/4 of hind orbit, venter of scape, tegula, center of mesoscutellum, small spot on metascutellum, horizontal band on lower





Figures 47–56. *Pachyprotasis citrinipicta*, female: (47) dorsal view; (48) lateral view; (49) mesonotum and metanotum, dorsal view; (50) mesopleuron and metapleuron, lateral view; (51) head, frontal view; (52) head, dorsal view; (53) ovipositor sheath, lateral view; (54) lance; (55) lancet; (56) middle serrulae of lancet.





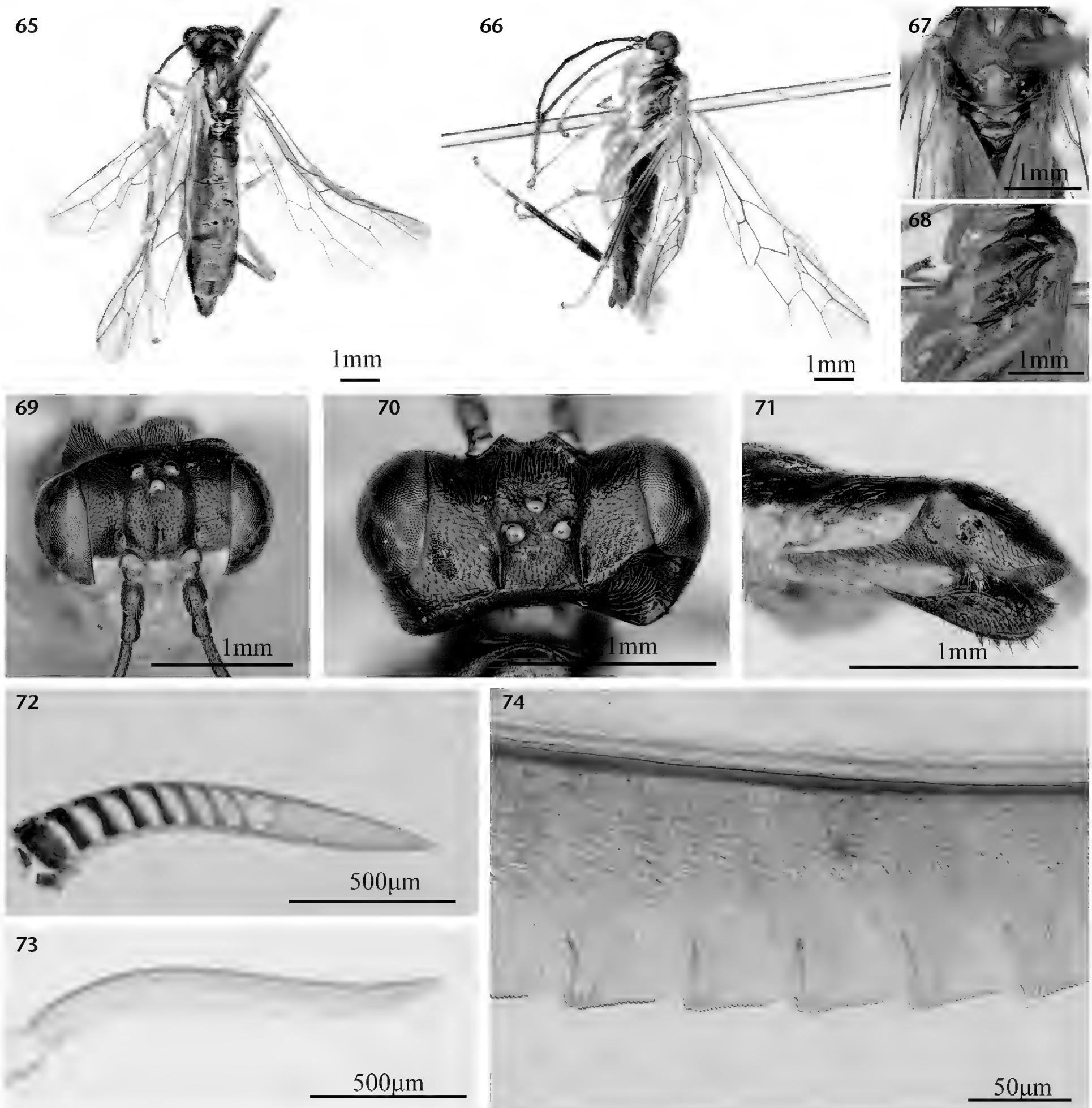
Figures 57–64. *Pachyprotasis citrinipicta*, male: (57) dorsal view; (58) lateral view; (59) mesonotum and metanotum, dorsal view; (60) mesopleuron and metapleuron, lateral view; (61) head, frontral view; (62) head, dorsal view; (63) harpe and parapenis; (64) penis valve.

part of mesepisternum, metepisternum except anterior edge, metepimeron, all of laterotergites, posterior parts of all sterna, lower part of ovipositor basal sheath; reddish-brown areas are: mesoscutum continuous with parapsis, lateral part of mesoscutellum, mesoscutellar appendage, mesepisternum except upper corner and lower band, posterior lower corner of mesepimeron; metepisternum yellowish-brown. Legs yellowish-brown, black are: faint stripes on dorsal part of fore and middle legs from apex of tibiae downwards, apical half of metatibia, metatibial spurs, metatarsomeres 1–3, apical half of metatarsomere 5; metacoxae except apex and basal half of metatibiae reddish-brown, metafe-mur completely striped with reddish-brown behind and partly striped with reddish-brown inside. Wings hyaline, veins C, R1 and 2r pale brown, stigma and other veins blackish-brown.

Labrum large and with round anterior margin; clypeus truncately incised to 1/3 of its middle length, lateral lobes blunt; malar space distinctly wider than diameter of median ocellus; inner margins of eyes slightly convergent downwards (Fig. 69); supra-antennal tubercles wanting, frontal area distinctly

elevated, above level of eyes in lateral view, frontal ridge broad and blunt; median fovea ditch-like, reaching median ocellus, supra-antennal pit shallow; interocellar furrow wide and shallow, postocellar furrow absent; postocellar area slightly elevated, broader than long by 2:1, lateral furrows deep and divergent backwards; head distinctly narrowed behind eyes (Fig. 70). Antenna shorter than thorax and abdomen together, flagellomere 1 slightly longer than flagellomere 2 by 32:31. Mesoscutellum prismatically elevated, lateral carina acute, mesoscutellar ap-pendage with acute middle carina. Metatarsomere 1 longer than following 4 tarsomeres together, claw with inner tooth as long as outer tooth. Front wing with middle petiole of anal cell longer than length of basal anal cell, distinctly longer than vein R+M by 8:3; petiole of anal cell on hind wing longer than half of vein cu-a.

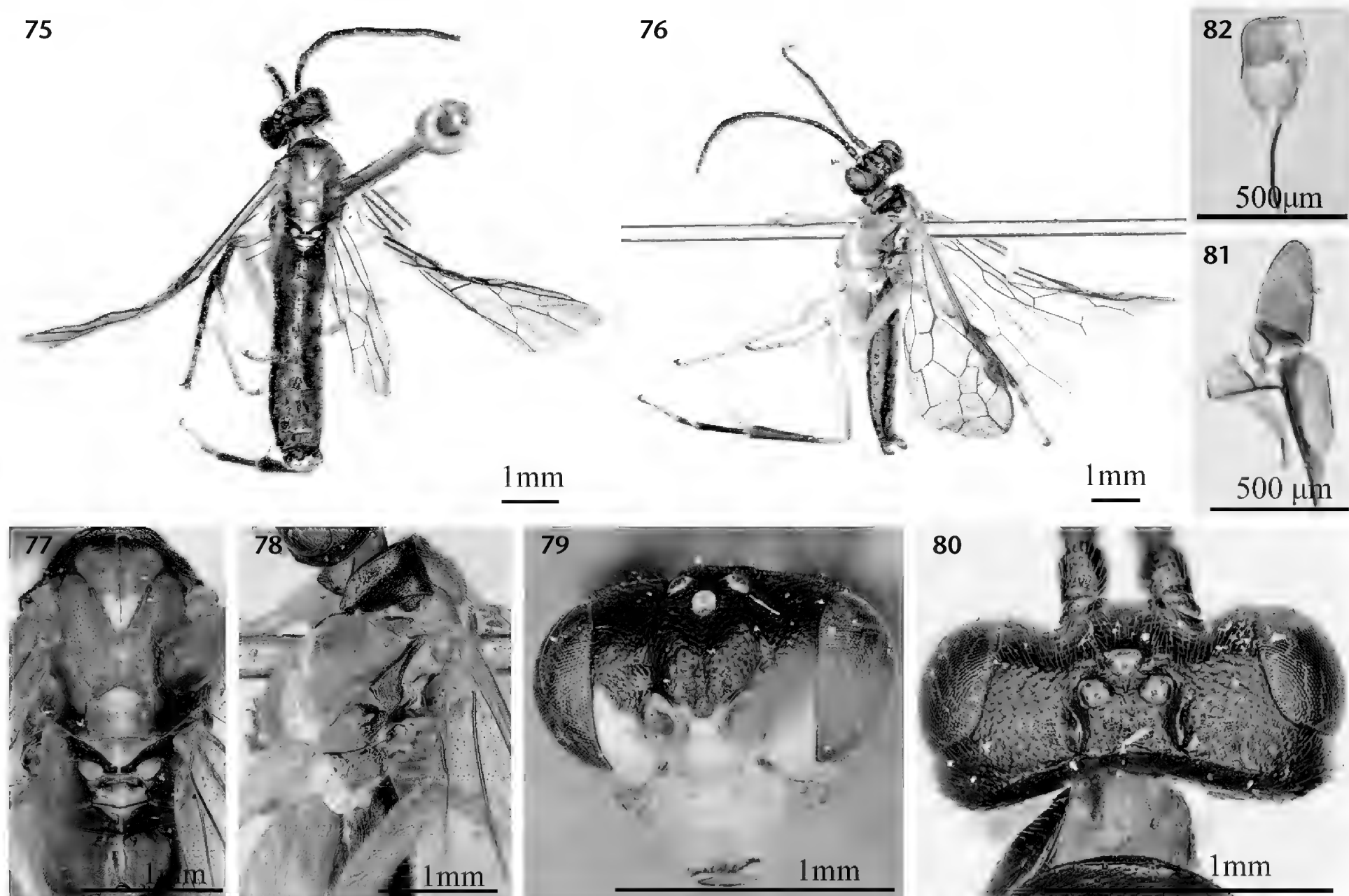
Punctures on labrum and clypeus sparse, indistinct; punctures on dorsal part of head minute and shallow, surface between punctures with dense microsculpture and with very faint opaque general lustre; punctures on mesonotum minute and dense,



Figures 65–74. *Pachyprotasis rufodorsata*, female: (65) dorsal view; (66) adult female, lateral view; (67) mesonotum and metanotum, dorsal view; (68) mesopleuron and metapleuron, lateral view; (69) head, frontal view; (70) head, dorsal view; (71) ovipositor sheath, lateral view; (72) lance; (73) lancet; (74) middle serrulae of lancet.

sub-shining; punctures on upper part of mesepisternum sparse and small, while ones on lower part extremely minute and shallow, surface between punctures polished, microsculpture indistinct, strongly shining; outer side of mesepimeron with distinct sculptures, sub-shining; punctures on metapleuron minute

and shallow, sub-shining; lateral part of mesoscutellum with a few shallow and minute punctures, lustre indistinct; punctures on terga sparse, minute and shallow, surface between punctures with microsculptures and oily luster; punctures on outer side of hind coxae minute, shallow and indistinct.



Figures 75–82. *Pachyprotasis rufodorsata*, male: (75) dorsal view; (76) lateral view; (77) mesonotum and metanotum, dorsal view; (78) mesopleuron and metapleuron, lateral view; (79) head, frontal view; (80) head, dorsal view; (81) harpe and parapenis; (82) penis valve.

Ovipositor sheath distinctly shorter than hind tarsomere 1; apical sheath distinctly longer than basal sheath (Fig. 71). Lancet with 22 annuli, base of each serrula flat, middle serrulae with 2 anterior and 21–23 posterior subbasal teeth (Figs 72–74).

Male. Body length 7.0 mm (Figs 75–80). Color and structure similar to female, except: apex of median mesoscutal lobe white, lateral mesoscutal lobe with a small central white spot, apex of metepisternum white; legs white, outer part of metacoxa with reddish-brown spot, inner and outer part of metafemur each with a reddish-brown spot on apex, basal 1/3 of metatibia yellowish-brown, apical 2/3 of metatibia, hind tarsomere 1, 2 and apex of tarsomere 5 black; antennomeres strongly compressed; gonoforceps and penis valve as in Figs 81–82.

Variation. Body length of female 8.0–9.0 mm and male 6.5–7.0 mm.

Distribution. China (Hubei, Ningxia, Shaanxi, Sichuan).

Type material. Holotype, ♀, China, Sichuan province, Mt. Emei, Leidongping, 29°32'N, 103°33'E, alt. 2500 m, 18-VII-2001, Meicai WEI leg. (SMN). Paratypes, 1 ♀, China, Sichuan province, Mt. Emei, Xixiangchi, 29°32'N, 103°33'E, alt. 2000 m, 19-VII-2001, Meicai WEI leg.; 7 ♀, China, Sichuan province, Mt. Emei, Leidong-

ping, 29°32'N, 103°33'E, alt. 2500 m, 18-VII-2001, Yihai ZHONG & Zejian LI leg.; 1 ♀, China, Sichuan province, Valley Hailuoguo, 29°22'N, 102°00'E, alt. 2200 m, 3-VII-2009, Zejian LI leg.; 1 ♀, China, Sichuan province, Mt. Emei, Jinding, 29°32'N, 103°33'E, alt. 2900 m, 7-VII-2009, Gengyun NIU leg.; 1 ♀, China, Hubei province, Mt. Shennongjia, Xiaolongtan, 31°15'N, 109°56'E, alt. 2100 m, 26-VI-2002, Yihai ZHONG leg.; 2 ♂, China, Hubei province, Mt. Shennongjia, Banbiyan, 31°28'N, 110°13'E, alt. 2500 m, 29-VI-2002, Yihai ZHONG leg.; 1 ♀, China, Hubei province, Mt. Shennongjia, Dalongtan, 31°29'N, 110°16'E, alt. 2312 m, 31-VII-2008, Fei LIU leg.; 4 ♀, China, Ningxia Autonomous Region, Jingyuan, Mt. Liupan, Xixia, 35°23'N, 106°18'E, alt. 1974 m, 1-VII-2008, Fei LIU leg.; 1 ♀, China, Ningxia Autonomous Region, Jingyuan, Mt. Liupan, Longtan, 35°23'N, 106°18'E, alt. 1945 m, 3-VII-2008, Fei LIU leg.; 2 ♀, China, Ningxia Autonomous Region, Jingyuan, Mt. Liupan, Dongshan, 35°23'N, 106°18'E, alt. 2050 m, 26-VI-2008, Fei LIU leg.; 1 ♀, 1 ♂, China, Shaanxi province, Xi'an, Chang'an District, Village Jiwozi, 33°31'N, 108°50'E, alt. 2077 m, 28-VI-2008, Xun ZHU & Xiaoyu JIANG leg. (SMN).

Etymology. The specific epithet, "*rufodorsata*", refers to the red notum, which is observed in both sexes of the new taxon.



### *Pachyprotasis nigratarsalia* sp. nov.

Figs 83–92

<http://zoobank.org/8DE4967D-FA1A-47AF-81F5-8A46AF6DEAED>

**Diagnosis.** This species is close to *P. rufodorsata* sp. nov. in general appearance, but it can be distinguished from the latter by the following characters: median and mesoscutal lobe black, lateral part and a central spot on lateral mesoscutal lobe reddish-brown; mesepisternum without white horizontal band; metatarsus black, without red macula; flagellomere 1 shorter than flagellomere 2; punctures on mesepisternum large, distinct.

**Description.** Holotype female (Figs 83–86). Body length 9.0 mm. Body black, with white pattern as follows: lateral part of clypeus, supraclypeal area, lower 1/4 of inner orbit continuous with lower 1/8 of hind orbit, venter of scape, tegula, central band on mesoscutellum, outer margin of mesepimeron, apical half of metepisternum, upper corner and apical half of metepimeron, narrow triangular spots on all posterior parts of terga, all of laterotergites, all posterior parts of sternites, lower part of basal sheath; reddish-brown are: posterior margin of pronotum, lateral margin of lateral mesoscutal lobe continuous with parapsis, spot on lateral mesoscutal lobe, lateral part of mesoscutellum and mesopostnotum, lateral part of metanotum, mesepisternum, central spot on mesepimeron; labrum and clypeus yellowish-brown. Legs yellowish-brown, with yellowish-white pattern as follows: fore and middle coxae, trochanters and base of femora, metatrochanter, metafemora except inner and outer bands on apex; apical 2/9 of metatibiae and whole metatarsus black. Wings hyaline, veins C, R1, 2r and stigma pale brown, other veins black.

Labrum large and with squarely pointed anterior margin; clypeus roundly incised to 1/3 of its middle length, lateral lobes a little blunt; malar space as long as diameter of median ocellus; inner margins of eyes slightly convergent downwards (Fig. 87); supra-antennal tubercles inconspicuous, frontal area indistinctly elevated, as high as level of eyes in lateral view, frontal ridges blunt; median fovea ditch-like, shallowly reaching median ocellus, supra-antennal pit shallow; interocellar furrow wide and a little deep, postocellar furrow shallow; postocellar area elevated, broader than long by 13:8, lateral furrows deep and slightly divergent backwards; head distinctly narrowed behind eyes (Fig. 88). Antenna longer than thorax and abdomen together, flagellomere 1 slightly shorter than flagellomere 2 by 38:41. Mesoscutellum prismatically elevated, lateral carina acute, mesoscutellar appendage with acute middle carina on basal half and blunt one on apical half. Metatarsomere 1 longer than following 4 tarsomeres together, claw with inner tooth longer than outer tooth. Front wing with middle petiole of anal cell shorter than length of basal anal cell, but longer than 2 times vein R+M; petiole of anal cell on hind wing distinctly longer than half of vein cu-a.

Punctures on labrum and clypeus sparse, minute and shallow; punctures on dorsal part of head minute and shallow,

slightly dense, surface between punctures with microsculpture and oily lustre; punctures on mesonotum and lower part of mesepisternum minute and dense, shining; punctures on upper part of mesepisternum moderate, surface between punctures with distinct oily lustre and microsculpture; outer part of mesepimeron with distinct sculptures, sub-shining, inner part polished, punctures absent, microsculpture indistinct; punctures on metapleuron minute, shallow and indistinct, surface between punctures with oily lustre; center of mesoscutellum polished without punctures, lateral part with a few large and shallow punctures, strongly shining; mesoscutellar appendage with distinct microsculpture, shining; punctures on terga sparse, minute and shallow, surface between punctures with microsculptures and oily luster; punctures on outer side of hind coxa minute, shallow and indistinct.

Ovipositor sheath longer than middle tarsomere 1 and round in lateral view, apical sheath distinctly longer than basal sheath (Fig. 89). Lancet with 22 annuli, base of each serrula flat, middle serrulae with 2 anterior and 15–16 posterior subbasal teeth (Figs 90–92).

Male. Unknown.

Variation. Body length of female 8.0–9.0 mm.

Distribution. China (Hunan).

**Type material.** Holotype, ♀, China, Hunan province, Yongzhou, Mt. Shunhuang, 26°24'N, 111°03'E, alt. 900–1200 m, 28-IV-2004, Wei XIAO leg. (ASMN). Paratypes, 29♀, China, Hunan province, Yongzhou, Mt. Shunhuang, 26°24'N, 111°03'E, alt. 900–1200 m, 28-IV-2004, Wei XIAO et. leg.; 5♀, China, Hunan province, Suining, Mt. Huangsang, 26°24'N, 111°03'E, alt. 900–1200 m, 28-IV-2004, Meicai WEI & Wei XIAO leg.; 3♀, China, Hunan province, Wugang, Mt. Yun, Yunfengge, 26°38'N, 110°37'E, alt. 1170 m, 13–14-IV-2010, Xiaohua WANG & Yanxia LIU leg. (ASMN).

**Etymology.** The specific epithet, “*nigratarsalia*”, refers to the black metatarsus.

### *Pachyprotasis zuoae* Wei, 2005

Figs 93–102

*Pachyprotasis zuoae* Wei, 2005: 487–488, fig. 488.

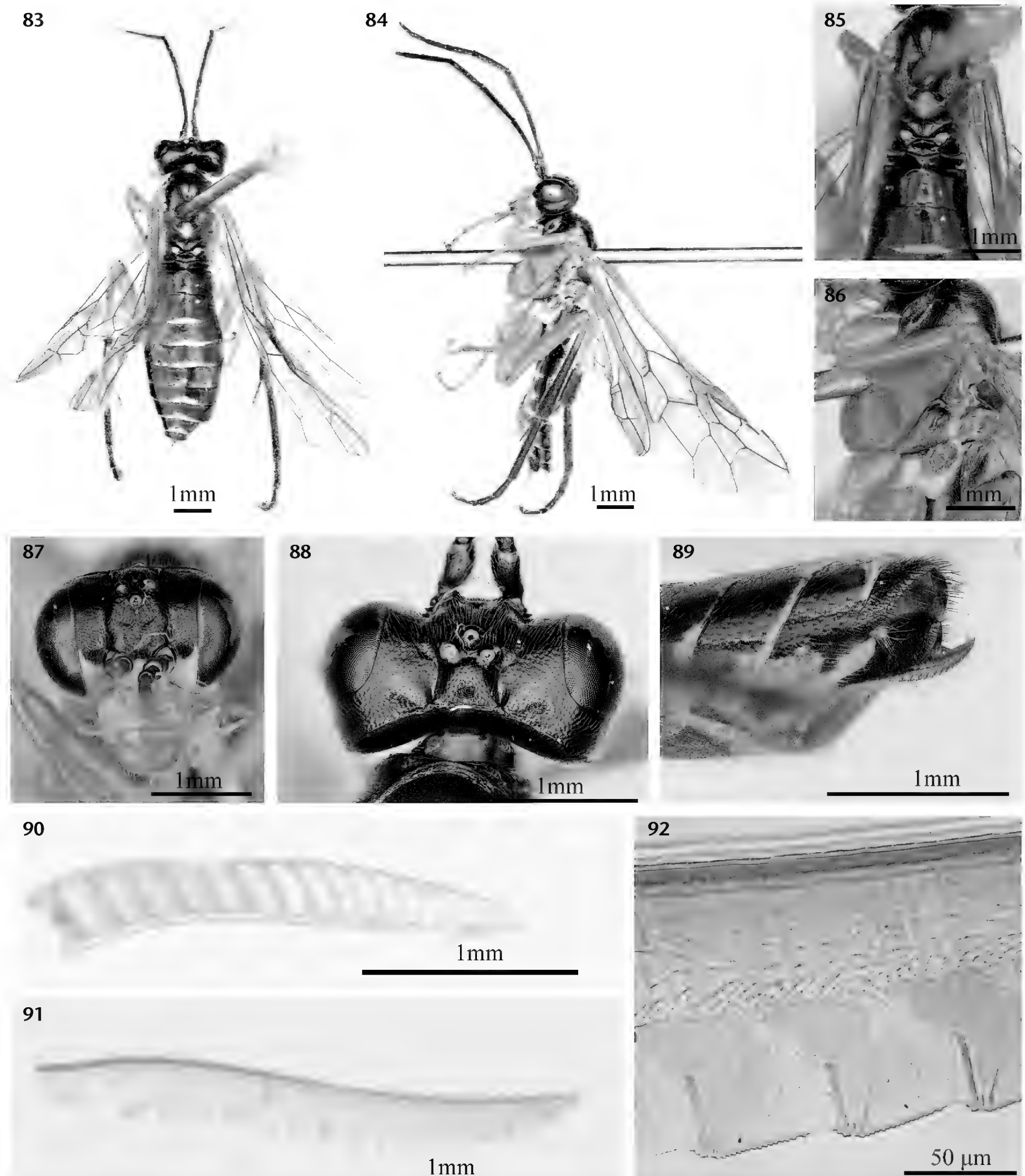
**Diagnosis.** Female. Body length 10.0 mm. This species is close to *P. parasubtilis* Wei and *P. lineatifemorata* Wei & Nie in general appearance, but it can be distinguished from them by the following characters: posterior part of each tergum with distinct white spot; apex of metafemur without black spot; punctures on frontal area minute, shallow and indistinct.

Male. Unknown.

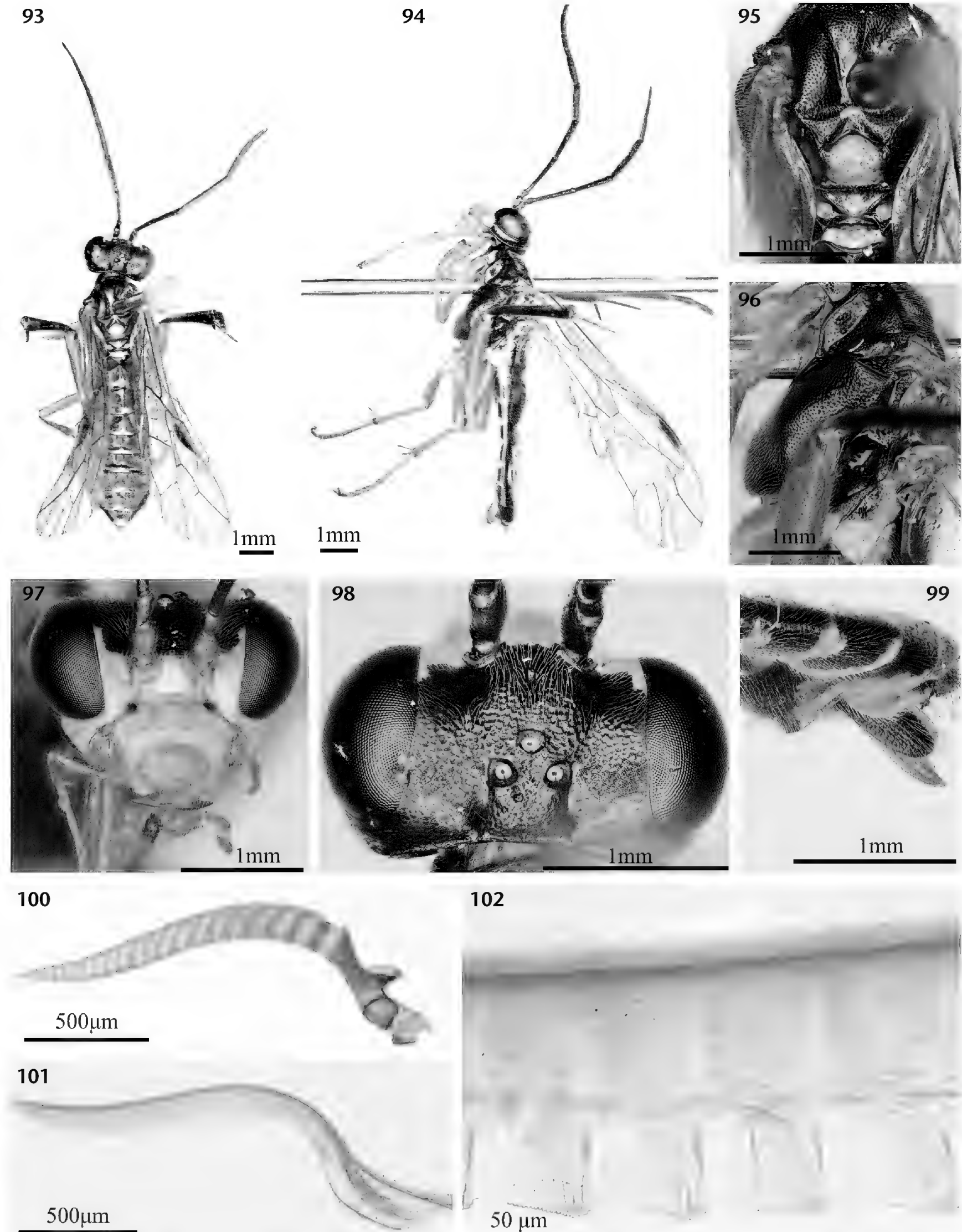
Variation. Body length of female 9.5–10.5 mm.

Distribution. China (Shaanxi, Gansu, Hunan, Hubei, Sichuan, Guizhou, Yunnan).

**Type material.** Holotype, 1♀, China, Guizhou province, Xishui, Ping River-Lin River, 28°19'N, 106°12'E, alt. 1500–1800 m, 2-VI-2000, Wei XIAO leg. (ASMN). Paratypes, 7♀, China, Guizhou province, Xishui, Ping Liver-Lin Liver,



Figures 83–92. *Pachyprotasis nigratarsalia*, female: (83) dorsal view; (84) lateral view; (85) mesonotum and metanotum, dorsal view; (86) mesopleuron and metapleuron, lateral view; (87) head, frontal view; (88) head, dorsal view; (89) ovipositor sheath, lateral view; (90) lance; (91) lancet; (92) middle serrulae of lancet.



Figures 93–102. *Pachyprotasis zuoae*, female: (93) dorsal view; (94) lateral view; (95) mesonotum and metanotum, dorsal view; (96) mesopleuron and metapleuron, lateral view; (97) head, frontal view; (98) head, dorsal view; (99) ovipositor sheath, lateral view; (100) lance; (101) lancet; (102) middle serrulae of lancet.



28°19'N, 106°12'E, alt. 1500–1800 m, 2-VI-2000, Wei XIAO leg.; 1♀, China, Henan province, Xiongshan, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1650 m, 19-VII-2002, Jigang JIANG leg.; 1♀, China, Hunan province, Sangzhi, Mt. Badagong, 29°40'N, 109°44'E, alt. 1250m, 13-VIII-2001, Jun WEN & Ningting HUANG leg.; 1♀, China, Hunan province, Sangzhi, Mt. Tianping, 29°47'N, 110°00'E, 8-VII-1981, Xinwang TONG leg.; 1♀, China, Hunan province, Sangzhi, Mt. Tianping, 29°47'N, 110°00'E, 18-VI-1981, Xinwang TONG leg. (ASMN).

Non-type material. 2♀, China, Guizhou province, Leishan, Forest Station Leigongshan, 26°21'N, 108°12'E, alt. 1600 m, 31-V-2005, Minwen LIANG leg.; 1♀, China, Guizhou province, Leishan, Town Fangxiang, 26°21'N, 108°12'E, alt. 1000 m, 1-VI-2005, Minwen LIANG leg.; 1♀, China, Sichuan province, Luding, Mt. Hailuoguo, 29°22'N, 102°00'E, alt. 2600–2700 m, 27-VII-2003, Wei XIAO leg.; 11♀, China, Sichuan province, Mt. Qingchenghou, Temple Baiyun, 30°56'N, 113°28'E, alt. 1600 m, 29-VI-2006, Hu ZHOU leg.; 1♀, China, Sichuan province, Tianquan, River Laba, 30°01'N, 102°78'E, alt. 1800–2000 m, 12-VII-2003, Hu ZHOU leg.; 2♀, China, Yunnan province, Jingdong, Mt. Wuliang, Qincitang, 24°16'N, 100°42'E, alt. 2197 m, 14-VII-2006, Qing YANG leg.; 9♀, China, Sichuan province, Luding, 29°22'N, 102°00'E, 2–3-VII-2009, Meicai WEI & Zejian LI leg.; 4♀, China, Sichuan province, Mt. River Anzi, Shaoyaoguo, 30°46'N, 103°13'E, 6–13-VII-2016, Kaiwen GAO leg.; 1♀, China, Henan province, Xiongshan, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1650 m, 20-VII-2003, Jigang JIANG leg.; 4♀, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1300 m, 20–23-VI-2006, Yihai ZHONG & Qing YANG leg.; 1♀, China, Gansu province, Wenxian, Reserve Baishuijiang, Sangdanbao, 32°95'N, 104°07'E, alt. 1300–1600 m, 30-VII-2005, Xun ZHU leg.; 1♀, China, Shaanxi province, Zhouzhi, Houzhenzi, 33°51'N, 107°50'E, alt. 1309 m, 7-VI-2006, Xun ZHU leg.; 1♀, China, Shaanxi province, Ningshan, Baxunyang, 33°33'N, 108°32'E, alt. 1400 m, 18-VI-2009, Haili YU leg.; 11♀, China, Shaanxi province, Liuba, Sangyuan, Fantiaoyu, 33°43'N, 107°14'E, alt. 1303 m, 14-VI-2014, Meicai WEI leg.; 10♀, China, Shaanxi province, Liuba, Sangyuan, Zhuan-touba, 33°43'N, 107°13'E, alt. 1158 m, 15-VI-2014, Meicai WEI leg.; 1♀, China, Shaanxi province, Foping, Temple Shanguan, 33°39'N, 107°48'E, alt. 1529 m, 20-VI-2014, Liwei QI & Weinan KANG leg.; 1♀, China, Hunan province, Yanling, Taoyuandong, 26°29'N, 114°02'E, alt. 900–1000 m, 24-IV-1999, Meicai WEI leg.; 1♀, China, Hunan province, Shimen, Mt. Huping, 30°07'N, 110°48'E, alt. 1400 m, 1-VI-2003, Yang JIANG leg.; 1♀, China, Hunan province, Shimen, Mt. Huping, 30°07'N, 110°48'E, alt. 1400 m, 13-VII-2003, Yang JIANG leg.; 19♀, China, Hunan province, Shimen, Mt. Huping, Jiangping, 30°07'N, 110°48'E, alt. 1200–1600 m, 9-VI-2004, Yang JIANG & Hu ZHOU leg.; 20♀, China, Hunan province, Yongzhou, Mt. Shunhuang, 26°24'N, 111°03'E, alt. 900–1200 m, 27–28-IV-2004, Meicai WEI leg.; 2♀, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, 30-V-2008, Fu ZHAO leg. (ASMN).

### *Pachyprotasis lineatifemorata* Wei & Nie, 1999

Figs 103–112

*Pachyprotasis lineatifemorata* Wei & Nie in Nie & Wei 1999: 109–110, fig. 110.

Diagnosis. Female. Body length 11.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: basal half of metafemur yellowish-white, apical half reddish-brown, outer side with black band along the whole length; metatibia black, without red; dorsal part of terga black, without distinct spot.

Male. Unknown.

Variation. Body length of female 10.0–11.0 mm.

Distribution. China (Hubei, Henan, Shaanxi, Sichuan).

Type material. Holotype, 1♀, China, Henan province, Mt. Neixiang, Baotianman, 33°30'N, 111°56'E, 14-VII-1998, Meicai WEI leg. (ASMN). Paratypes, 1♀, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, 14-VII-1998, Meicai WEI leg. (ASMN).

Non-type material. 1♀, China, Henan province, Lushi, Forest Farm Dakuaidi, 33°45'N, 110°59'E, alt. 1700 m, 20-VII-2001, Yihai ZHONG leg.; 1♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1800 m, 24-VII-2001, Yihai ZHONG leg.; 1♀, China, Shaanxi province, Fengxian, Source of River Jialing, 34°13'N, 106°59'E, alt. 1617 m, 14-VII-2007, Xiaoyu JIANG leg.; 2♀, China, Sichuan province, Tianquan, River Laba, 30°01'N, 102°78'E, alt. 1900–2200 m, 13-VII-2003, Wei XIAO & Weixing LIU leg.; 7♀, China, Hubei province, Mt. Shennongjia, Honghuaduo, 31°43'N, 110°43'E, alt. 1200 m, 3-VII-2007, Yihai ZHONG leg.; 1♀, China, Hubei province, Mt. Shennongjia, 31°43'N, 110°43'E, 28-VII-2008, Fu ZHAO leg.; 2♀, China, Hubei province, Mt. Shennongjia, Honghuan, 31°43'N, 110°43'E, alt. 1745 m, 31-VII-2016, Wei XIAO leg. (ASMN).

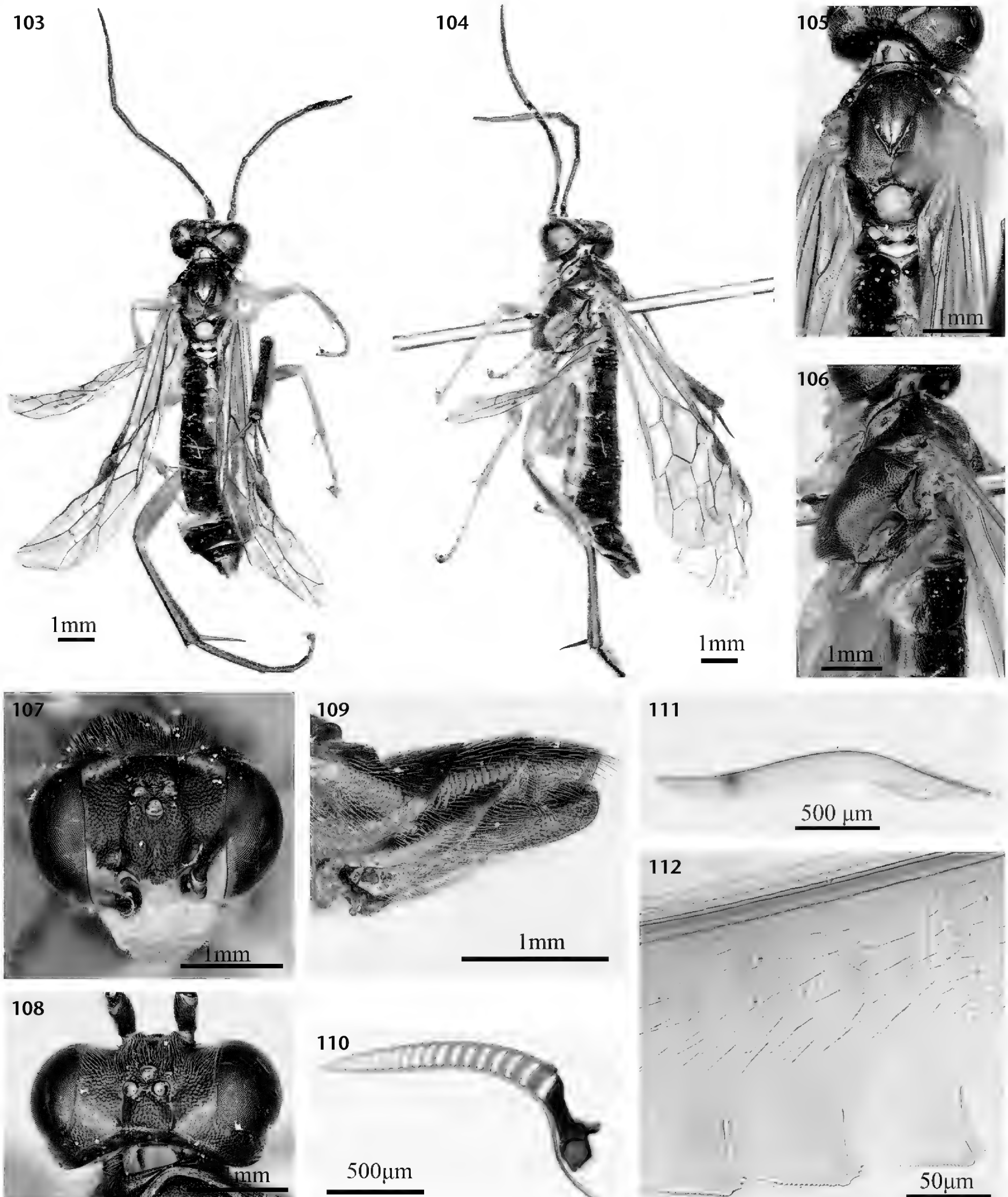
### *Pachyprotasis parasubtilis* Wei, 1998

Figs 113–130

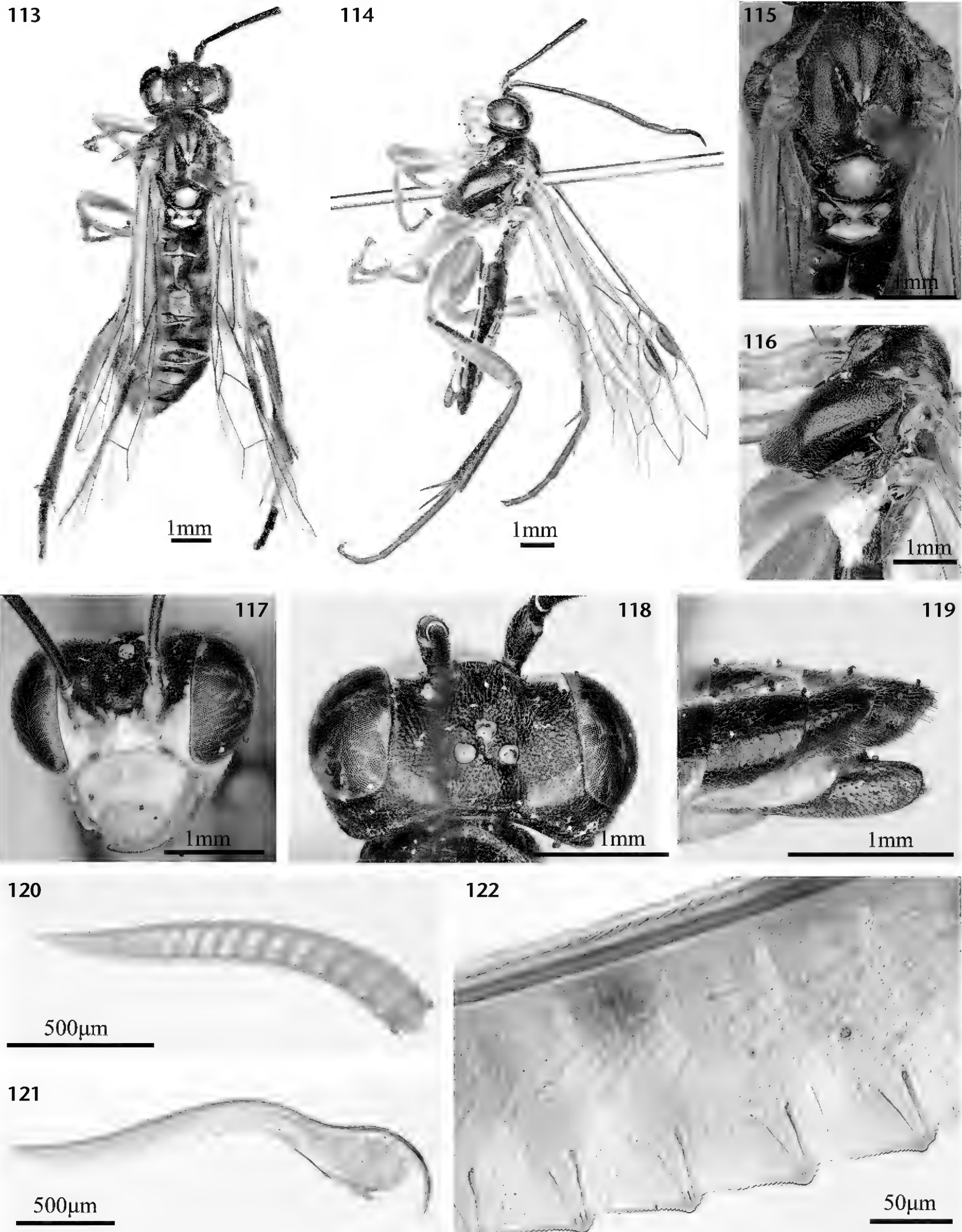
*Pachyprotasis parasubtilis* Wei, 1998 in Wei & Nie, 1998a: 162–163.

Diagnosis. Female (Figs 113–122). Body length 10.0 mm. This species is similar to *P. subtilis* Malaise in general appearance, but it can be distinguished from the latter by the following characters: antenna shorter than thorax and abdomen together; metatibia and metatarsus black, without red; metacoxa red; this species is also close to *P. lineatifemorata* Wei & Nie in general appearance, but it can be distinguished from the latter by the following characters: outer side of metafemur with black band only at basal half; base of each serrula distinctly elevated.

Male (Figs 123–130). Body length 9.0 mm. Color and structure similar to female, except: fore and middle legs white, outer side of coxae with black spot, dorsal side with black stripe from base of femora to claws; hind legs black, trochanter and basal 3/5 of femur white, full length of femur with white stripe on dorsal side, outer side of trochanter and base of femur with black stripe; antennomeres strongly compressed.

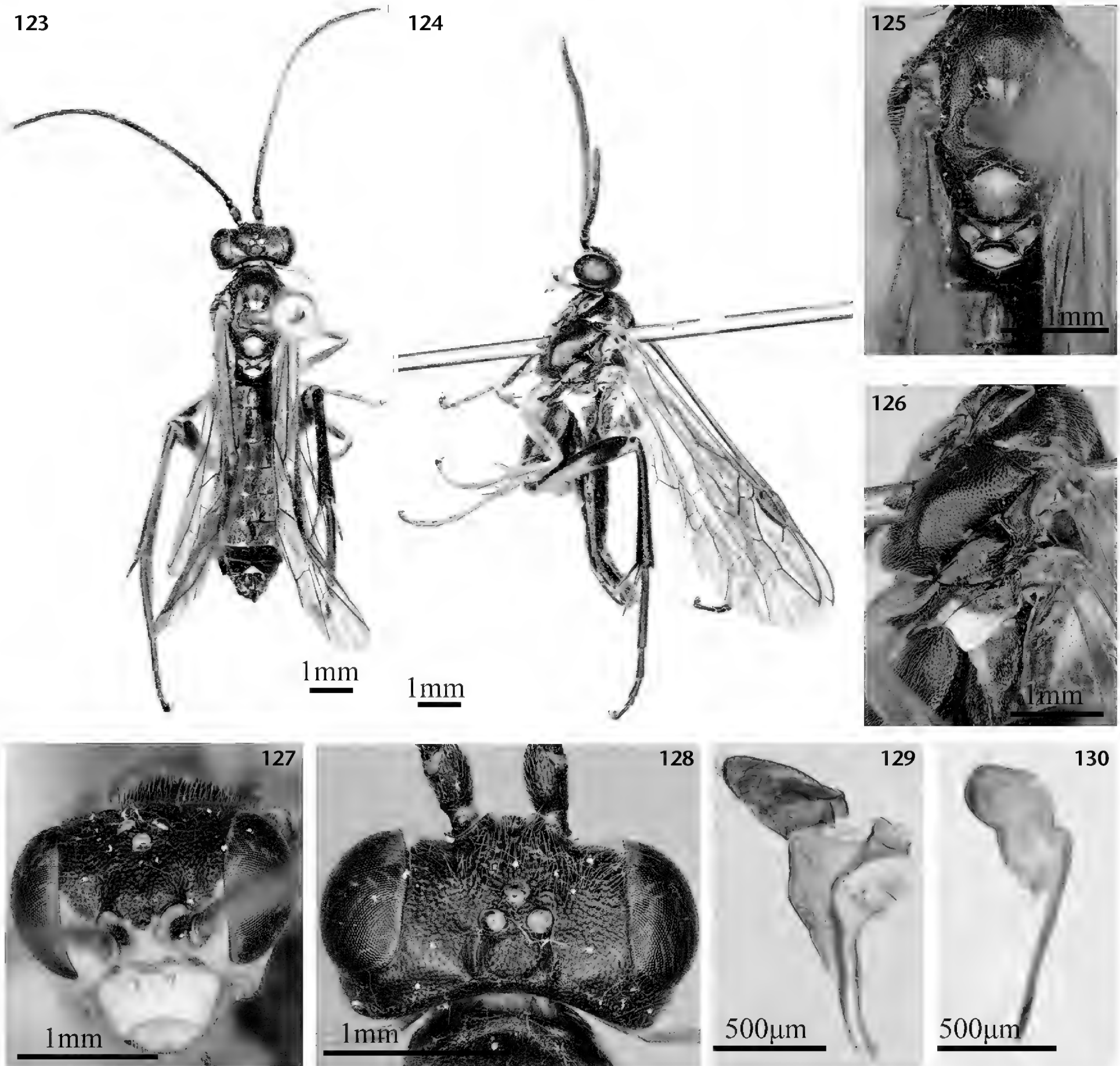


Figures 103–112. *Pachyprotasis lineatifemorata*, female: (103) dorsal view; (104) lateral view; (105) mesonotum and metanotum, dorsal view; (106) mesopleuron and metapleuron, lateral view; (107) head, frontal view; (108) head, dorsal view; (109) ovipositor sheath, lateral view; (110) lance; (111) lancet; (112) middle serrulae of lancet.



Figures 113–122. *Pachyprotasis parasubtilis*, female: (113) dorsal view; (114) lateral view; (115) mesonotum and metanotum, dorsal view; (116) mesopleuron and metapleuron, lateral view; (117) head, frontal view; (118) head, dorsal view; (119) ovipositor sheath, lateral view; (120) lance; (121) lancet; (122) middle serrulae of lancet.





Figures 123–130. *Pachyprotasis parasubtilis*, male: (123) dorsal view; (124) lateral view; (125) mesonotum and metanotum, dorsal view; (126) mesopleuron and metapleuron, lateral view; (127) head, frontal view; (128) head, dorsal view; (129) harpe and parapenis; (130) penis valve.

Variation. Body length of female 9.0–10.5 mm and male 8.5–9.0 mm.

Distribution. China (Guizhou, Henan, Hubei, Hunan, Shaanxi).

Type material. Holotype, 1♀, China, Henan province, Songxian, 33°54'N, 111°59'E, 14-VI-1996, Jun WEN leg. (ASMN). Paratypes, 15♀, 19♂, China, Henan province, Songxian, 33°54'N, 111°59'E, 14-VI-1996, Jun WEN leg. (ASMN).

Non-type material. 24♀, 10♂, China, Henan province, Songxian, Mt. Baotianman, 33°30'N, 111°56'E, 11-VII-1998, Meicai WEI & Wei XIAO leg.; 1♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1800 m, 24-VII-1998, Yihai ZHONG leg.; 1♀, China, Henan province, Songxian, Mt. Baotianman, Pingfang, 33°30'N, 111°56'E, alt. 1200 m, 24-VII-1999, Ping CAI leg.; 13♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1500–1600 m, 14–20-VII-2004,

Shaobing ZHANG & Yingke HE leg.; 3♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1500 m, 20–24-VII-2003, Yingke HE leg.; 5♀, China, Henan province, Luanchuan, Longyuwan, 33°54'N, 111°43'E, alt. 1600 m, 29-VII-2003, Yingke HE leg.; 75♀, China, Henan province, Songxian, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1300–1900 m, 22–25-VII-2004, Weixing LIU leg.; 1♀, China, Henan province, Songxian, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1300m, 23-VI-2006, Qing YANG leg.; 10♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1650–1800 m, 19–25-VII-2002, Jigang JIANG leg.; 1♀, China, Shaanxi province, Zhenping, Ankang, 31°53'N, 109°31'E, alt. 1200 m, 6-VII-2003, Haili YU leg.; 1♀, China, Hubei province, Mt. Wudang, Temple Chaotian, 31°21'N, 110°34'E, 16-VIII-1984; 1♀, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, alt. 2100 m, 21-VIII-2003, Hu ZHOU leg.; 5♀, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, 17-VII-2009, Jiao ZHAO leg.; 4♀, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, 16-VII-2009, Fu ZHAO leg.; 2♀, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, 29-VII-3-VIII-2008, Fu ZHAO leg.; 3♀, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, 21–22-VII-2009, Zhao JIAO & Fu ZHAO leg.; 1♂, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, 30-V-2008, Fu ZHAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, alt. 1745 m, 31-VII-2016, Wei XIAO leg.; China, Hubei province, Mt. Shennongjia, Yinyuhe, 31°21'N, 110°34'E, alt. 1745 m, 20-VI-2011, Yuanqin LI leg.; 1♀, China, Hunan province, Shimen, Mt. Huping, 30°07'N, 110°48'E, alt. 1300 m, 31-V-2003, Yang JIANG leg.; 1♀, China, Hunan province, Shimen, Mt. Huping, Jiangping, 30°07'N, 110°48'E, alt. 1200–1600 m, 19-VI-2004, Hu ZHOU leg.; 1♀, China, Guizhou province, Zunyi, Dashahe, 29°09'N, 107°36'E, alt. 1100 m, 22-V-2004, Yang LIN leg. (ASMN).

### *Pachyprotasis xanthotarsalia* Wei & Nie, 2003

Figs 131–148

*Pachyprotasis xanthotarsalia* Wei & Nie, 2003: 200; Wei, 2006: 621–622.

**Diagnosis.** Female (Figs 131–140). Body length 12.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: inner and hind orbit white, area between antennal sockets white; lateral part of median mesoscutal lobe with broad yellowish-white “V” spot; mesopleuron black, anterior part with a white spot, central part white; terga black, central parts of terga 2–6 and areas adjacent to spiracles each with a triangular white spot; metacoxa yellowish-brown, outer part with a large yellowish-white spot on base, apex with large black spot, metafemur and metatibia reddish-brown, apex of metatibia black, hind tarsomere 1 yellowish-brown, tarsomeres 2–5 yellowish-white.

**Male** (Figs 141–148). Body length 10.5 mm. Color and structure similar to female, except: apex of metafemur and basal half of hind tarsomere 1 black, antennomeres strongly compressed.

**Variation.** Body length of female 11.0–12.0 mm and male 10.0–10.5 mm.

**Distribution.** China (Fujian, Anhui, Zhejiang, Jiangxi, Hunan, Guizhou).

**Type material.** Holotype ♀, China, Hunan province, Yanglin, Taoyuandong, 26°29'N, 114°02'E, 24-IV-1999, Meicai WEI & Kaijian ZHANG leg. (ASMN). Paratypes, 1♀, China, Hunan province, Yanglin, Taoyuandong, 26°29'N, 114°02'E, 24-IV-1999, Meicai WEI & Kaijian ZHANG leg.; 1♀, China, Fujian province, Siqian, Guangze, 27°54'N, 117°32'E, alt. 450–600 m, 26-IV-1960, Yintao JIN & Yangmin LIN leg.; 1♀, China, Fujian province, Siqian, Zhima, 27°28'N, 117°10'E, alt. 200–300 m, 4-IV-1960, Yintao JIN & Yangmin LIN leg.; 2♀, China, Hunan province, Yanling, Taoyuandong, 26°29'N, 114°02'E, 20-V-1995, Boyi ZHEING leg. (ASMN).

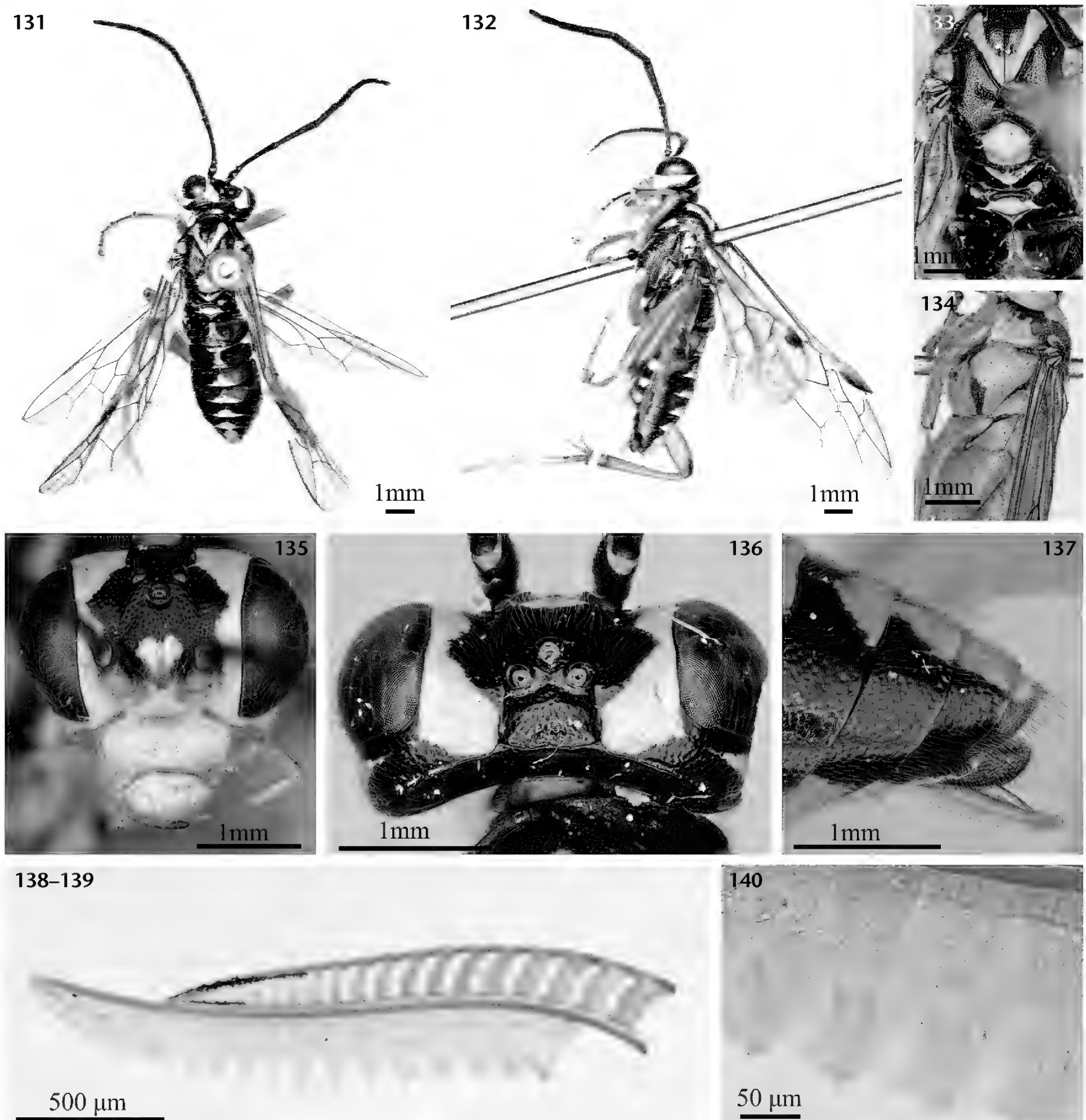
**Non-type material.** 2♀, China, Fujian province, Mt. Wuyi, Guadun, 27°39'N, 117°57'E, alt. 1000–1500 m, 18-V-2004, Shaobing ZHANG & Hu ZHOU leg.; 1♀, China, Anhui province, Qingyang, Mt. Jiuhua, 30°28'N, 117°49'E, alt. 700 m, 9-V-2007, Xiaoni ZHU leg.; 2♀, China, Hunan province, Mt. Heng, Banshanting, 27°16'N, 112°42'E, 9-IV-2004, Shaobing ZHANG leg.; 1♀, China, Hunan province, Suining, Mt. Huangsang, 26°26'N, 114°04'E, alt. 600–900 m, 21-IV-2005, Wei XIAO leg.; 1♂, China, Hunan province, Wugang, Mt. Yun, 26°38'N, 110°37'E, alt. 1100 m, 26-IV-2005, Meicai WEI leg.; 1♂, China, Hunan province, Wugang, Mt. Yun, TV Tower, 26°38'N, 110°37'E, alt. 1380 m, 26-IV-2005, Zejian LI leg.; 1♀, China, Guizhou province, Mt. Fanjing, 28°00'N, 108°04'E, 15-V-1999, Meicai WEI leg.; 1♀, China, Hunan province, Mt. Dawei, Chunquiao, 28°25'N, 114°06'E, alt. 1300 m, 3-V-2010, Zejian LI leg.; 1♀, China, Hunan province, Mt. Dawei, Limuqiao, 28°25'N, 114°05'E, alt. 980 m, 3-V-2010, Zejian LI & Liwei QI leg.; 1♀1♂, China, Zhejiang province, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 405 m, 17–22-IV-2017, Mengmeng LIU et. Leg.; 1♂, China, Zhejiang province, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 405 m, 8-IV-2018, Mengmeng LIU et. Leg.; 1♀, China, Fujian province, Mt. Wuyi, Guadun, 27°39'N, 117°57'E, alt. 1000–1500 m, 18-V-2004, Hu ZHOU leg.; 1♂, China, Zhejiang province, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 12-IV-2015, Zejian LI leg.; 3♀, 1♂, China, Zhejiang province, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 15-IV–4-V-2016, Zejian LI et. Leg.; 4♀, China, Zhejiang province, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 19-IV–7-V-2017, Mengmeng LIU et. Leg.; 1♀, China, Jiangxi province, Yifeng, Mt. Guan, Station Donghe, 28°32'N, 116°36'E, IV-2016, Fuping FANG leg. (ASMN, LSAF).

### *Pachyprotasis rufinigripes* Wei & Nie, 1998

Figs 149–158

*Pachyprotasis rufinigripes* Wei & Nie, 1998b: 372–373, fig. 372.

**Diagnosis.** Female. Body length 9.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: metacoxa reddish-brown, outer part with a white spot on base, metafemur and metatibia



Figures 131–140. *Pachyprotasis xanthotarsalia*, female: (131) adult, dorsal view; (132) adult, lateral view; (133) mesonotum and metanotum, dorsal view; (134) mesopleuron and metapleuron, lateral view; (135) head, frontal view; (136) head, dorsal view; (137) ovipositor sheath, lateral view; (138) lance; (139) lancet; (140) middle serrulae of lancet.

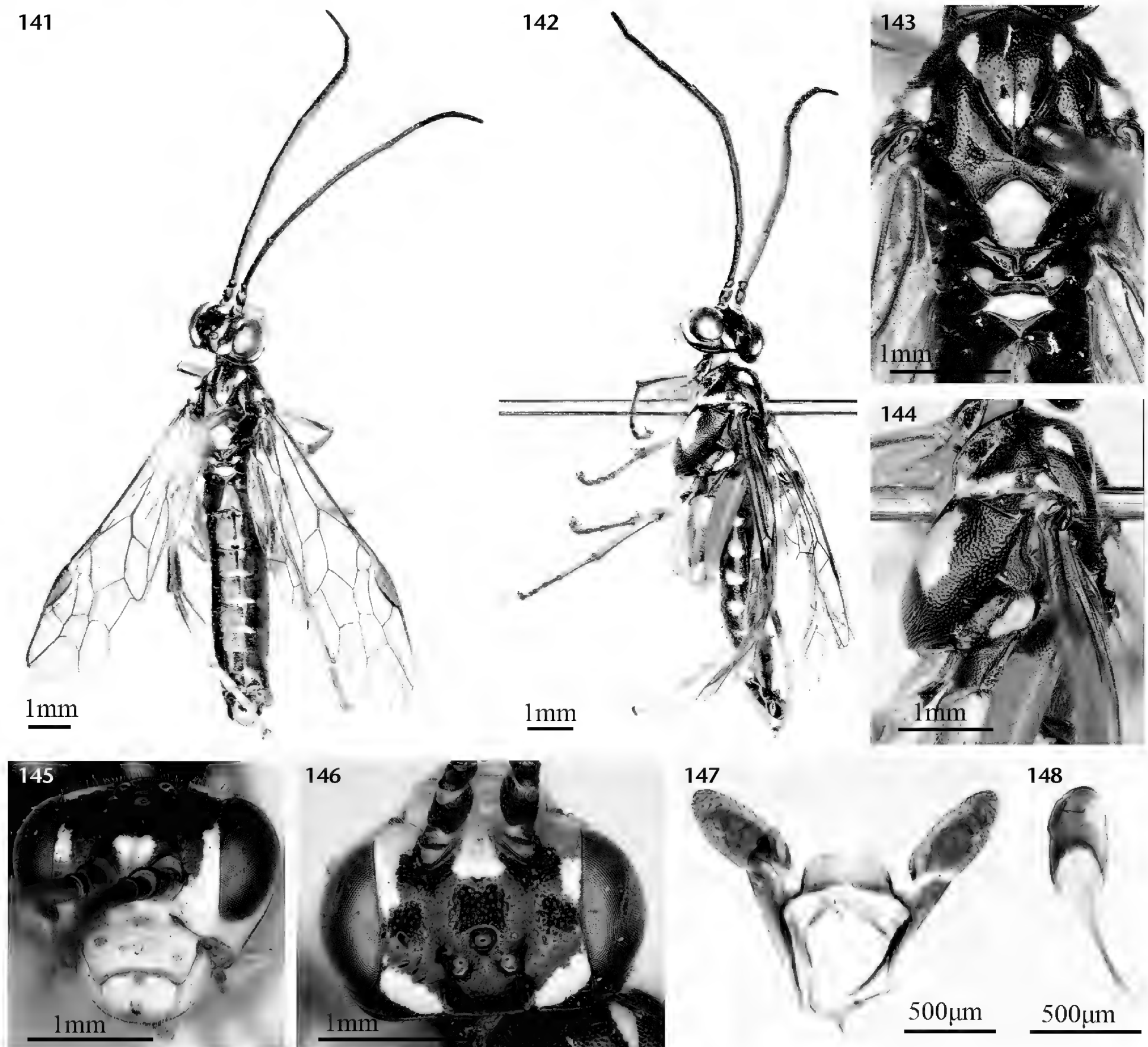
reddish-brown, apex of metatibia black; face of antennal socket black, inner and hind orbit black, lower 1/4 white; mesopleuron black, anterior part sometimes with a small white spot; terga black, central parts of terga 1–7 each with a triangular white

spot on apex; punctures on mesepisternum coarse and irregular; anal cell of hind wing sessile.

Male. Unknown.

Variation. Body length of female 9.0–9.5 mm.





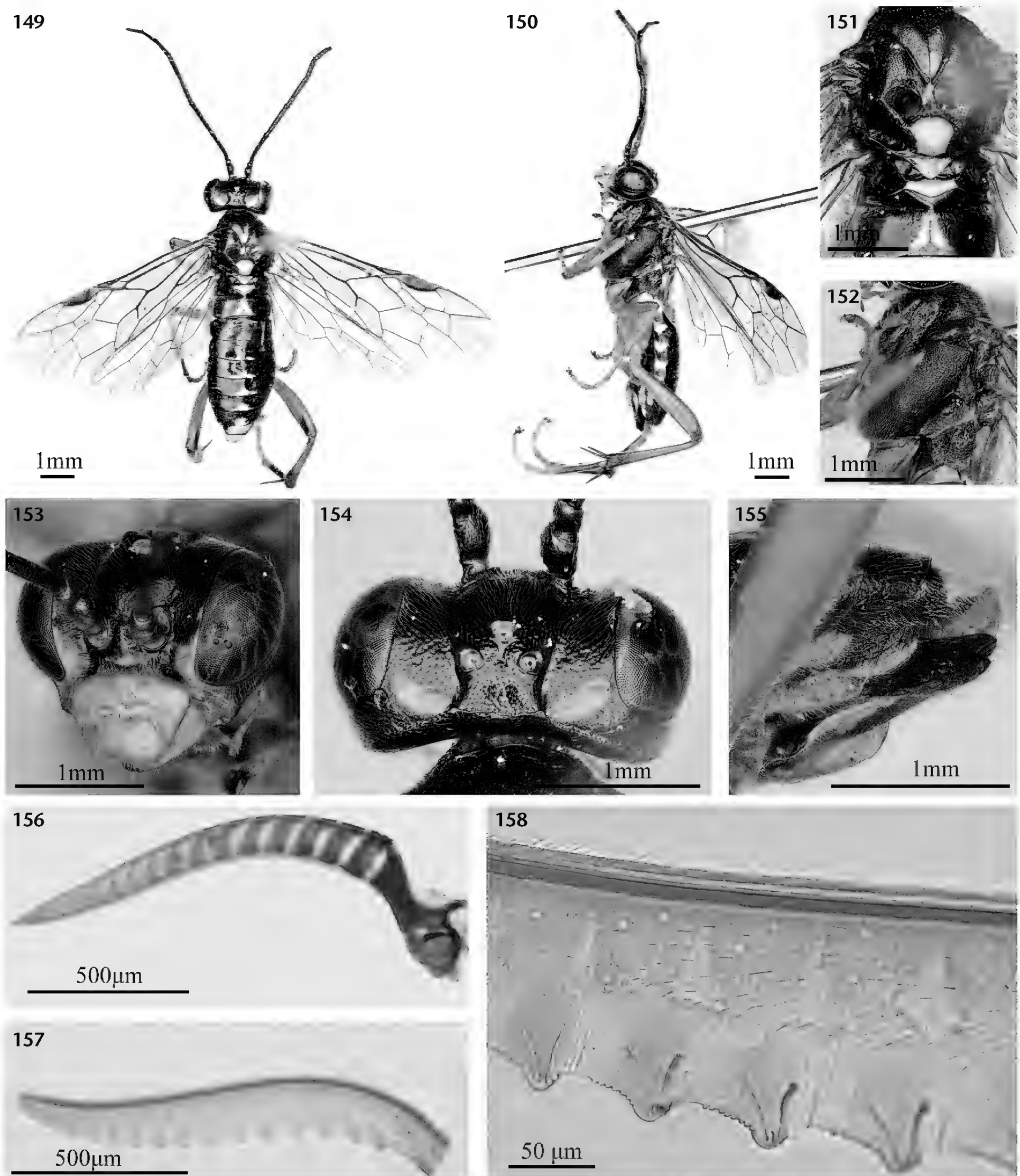
Figures 141–148. *Pachyprotasis xanthotarsalia*, male: (141) dorsal view; (142) lateral view; (143) mesonotum and metanotum, dorsal view; (144) mesopleuron and metapleuron, lateral view; (145) head, frontal view; (146) head, dorsal view; (147) harpe and parapenis; (148) penis valve.

Distribution. China (Hunan, Zhejiang).

Type material. Holotype, ♀, China, Zhejiang province, Anji, Mt. Longwang, 30°23'N, 119°24'E, 13-IV-1996, Hong WU leg. (ASMN).

Non-type material. 1♀, China, Zhejiang province, Lin'an District, Mt. Qingliangfeng, Longding, 30°07'N, 118°54'E, alt. 930 m, 27-IV-2010, Zejian LI leg.; 1♀, China, Hunan province, Suining, Mt. Huangsang, 26°26'N, 110°04'E, alt. 600–900 m, 21-IV-2005, Yang LIN leg.; 1♀, China, Hunan province, Yizhang,

Mt. Mang, 24°56'N, 112°55'E, alt. 540 m, 21-IV-2005, Lingyan ZHANG leg.; 5♀, China, Hunan province, Wugang, Mt. Yun, Yunfengge, 26°38'N, 110°37'E, alt. 1170 m, 12-20-IV-2010, Xiaohua WANG leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, 26°38'N, 110°37'E, alt. 950 m, 14-IV-2010, Yanxia LIU leg.; 3♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362–405 m, 10-IV-2015, Zejian LI et. leg.; 6♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362–405



Figures 149–158. *Pachyprotasis rufinigripes*, female: (149) dorsal view; (150) lateral view; (151) mesonotum and metanotum, dorsal view; (152) mesopleuron and metapleuron, lateral view; (153) head, frontal view; (154) head, dorsal view; (155) ovipositor sheath, lateral view; (156) lance; (157) lancet; (158) middle serrulae of lancet.

m, 15-IV-4-V-2016, Zejian LI et. leg.; 42♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362–405 m, 6-IV-10-V-2017, Zejian LI et. leg.; 37♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362–405 m, 12-20-4-2018, Zejian LI et. leg.; 4♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362–405 m, 7-8-IV-2019, Zejian LI et. leg.; 2♀, China, Zhejiang province, Lishui, Mt. Baiyun, 28°32'N, 119°55'E, alt. 956 m, 6-IV-30-III-2015, Zejian LI leg. (ASMN, LSAF).

### *Pachyprotasis subulicornis* Malaise, 1945

Figs 159–176

*Pachyprotasis subulicornis* Malaise, 1945: 153; Saini & Kalia, 1989: 163–164, figs 141, 145, 155, 166, 176; Saini, 2007: 71–72, figs 161, 164, 168, 175, 177, 181, 202; Wei, 2005: 487; Wei, 2006: 622; Wei & Lin, 2005: 450; Wei et al., 2007: 611–612.

**Diagnosis.** Female (Figs 159–168). Body length 7.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesopleuron black, anterior part sometimes with a small white spot; terga black, without distinct spot; metacoxa white, ventral side with large black spot, basal 1/5 of metafemur white, apical 4/5 reddish-brown, metatibia entirely reddish-brown, metatarsus white, basal part of tarsomere 1 and apex of tarsomere 5 black; punctures on mesepisternum large and deep.

**Male** (Figs 169–176). Body length 6.5 mm. Color and structure similar to female, except: fore and middle legs white, without red; antennomeres strongly compressed.

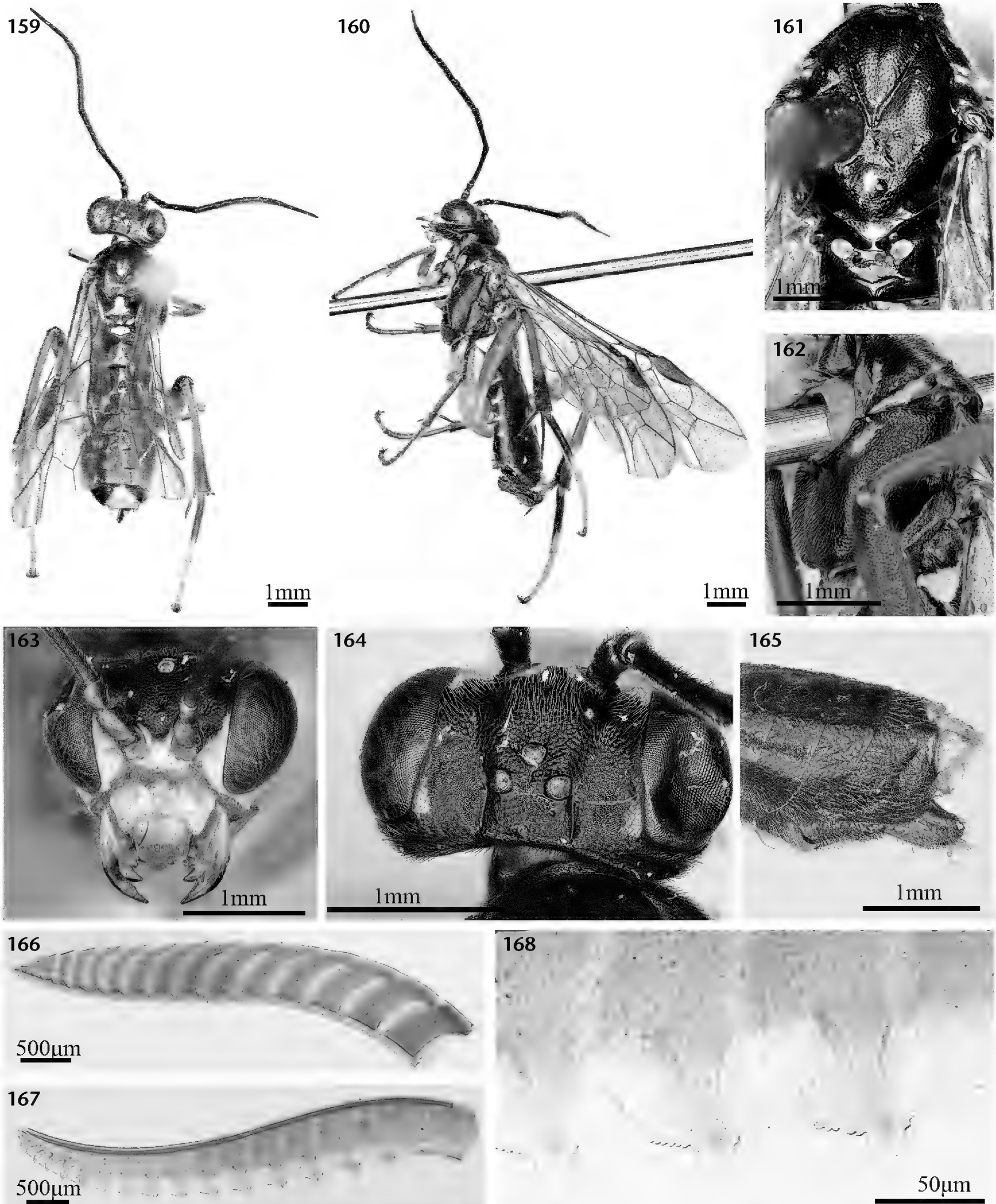
**Variation.** Body length of female 7.0–7.5 mm and male 6.0–6.5 mm.

**Distribution.** China (Anhui, Fujia, Guangdongn, Guizhou, Henan, Hubei, Hunan, Shaanxi, Yunnan, Zhejiang), India, Burma-Yunnan frontier.

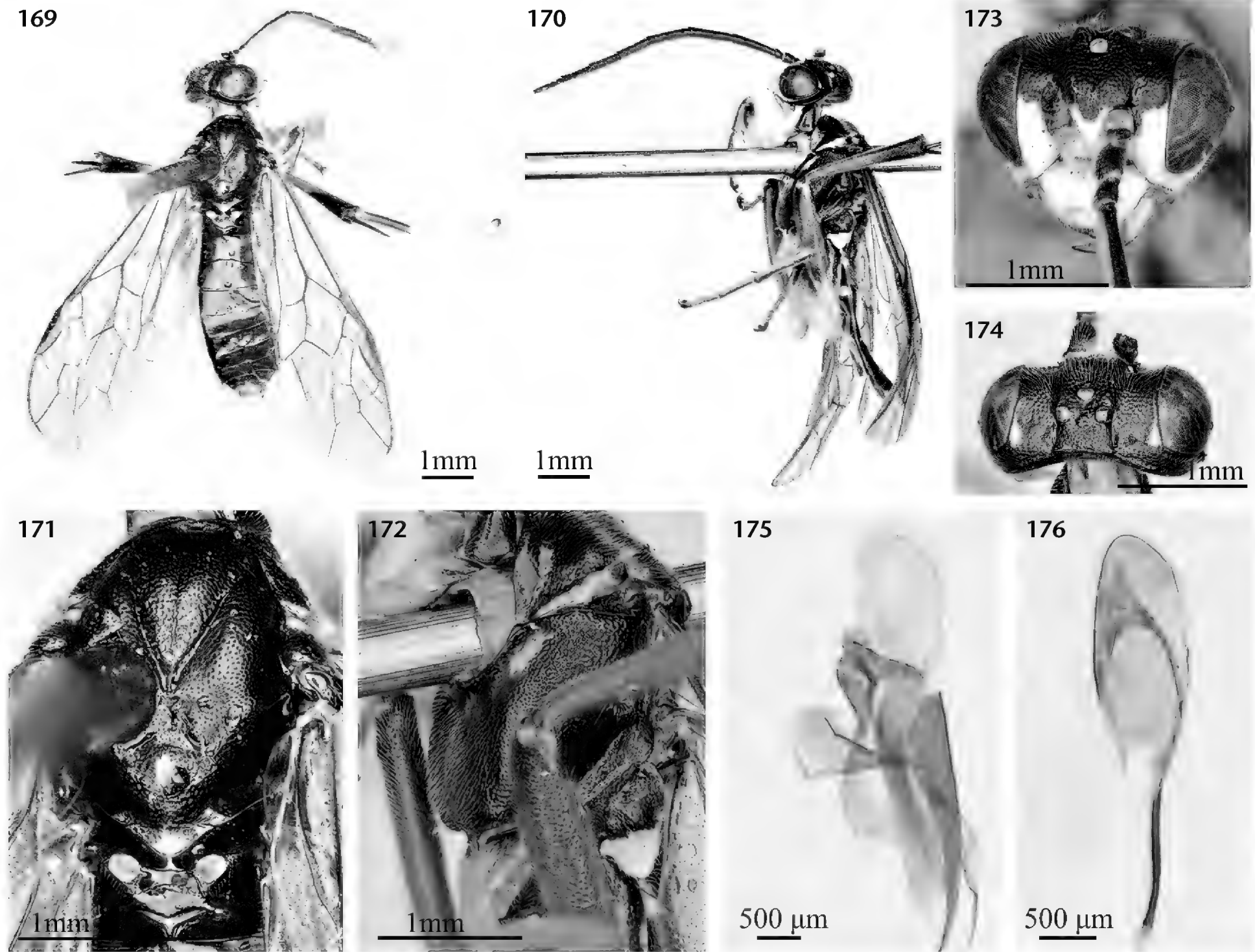
**Non-type material.** 1♀, China, Anhui province, Yuexi, Village Baojia, 31°04'N, 116°07'E, alt. 500 m, 27-IV-2007, Mei NIE leg.; 1♀, China, Anhui province, Jinzhai, Village Tiantangzhai, 31°08'N, 115°47'E, alt. 945 m, 1-VI-2006, Hu ZHOU leg.; 1♀, China, Anhui province, Qingyang, Mt. Jiuhua, 30°28'N, 117°49'E, alt. 600–700 m, 8-9-V-2007, Xiaoni ZHU leg.; 1♀, China, Fujian province, Jiangle, Mt. Longxi, 26°30'N, 119°18'E, 9-X-1991, Xuexin CHEN leg.; 2♀, China, Fujian province, Mt. Wuyi, Moshikeng, 27°39'N, 117°57'E, alt. 900–1100 m, 11-V-2004, Hu ZHOU leg.; 1♂, China, Henan province, Luanchuan, Longyuwan, 33°42'N, 111°44'E, alt. 1600–1800 m, 21-VII-2004, Shaobing ZHANG leg.; 1♀, China, Shaanxi province, Xifeng, Town Siping, 33°36'N, 110°16'E, alt. 900–1200 m, 11-V-2005, Shouzhu LIU leg.; 1♀, China, Hubei province, Xingshan, River Longmen, 31°19'N, 110°30'E, 14-IX-1994; 1♂, China, Hubei province, Xingshan, River Longmen, 31°19'N, 110°30'E, 14-IV-1994; 1♀, China, Hubei province, Wufeng, River Hou, 30°12'N, 110°36'E, alt. 1200 m, 12-VII-1999, Wenjun BU leg.; 4♀1♂, China, Hubei province, Mt. Shennongjia, Honghuaduo, 31°43'N, 110°43'E,

alt. 1200 m, 3-VII-2007, Meicai WEI et. leg.; 2♀, China, Hubei province, Mt. Shennongjia, Xiaolongtan, 31°43'N, 110°43'E, alt. 1800 m, 4-VII-2007, Meicai WEI & Yihai ZHONG leg.; 1♀, China, Hubei province, Mt. Shennongjia, Jizhigou, 31°25'N, 110°32'E, alt. 841 m, 9-VII-2010, Wei XIAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, Honghuaduo, 31°43'N, 110°43'E, alt. 1200 m, 3-VII-2007, Meicai WEI & Yihai ZHONG leg.; 1♀, China, Hubei province, Mt. Shennongjia, Laojunshan, 31°31'N, 110°19'E, alt. 1758 m, 16-V-2008, Zhao JIAO leg.; 91♀1♂, China, Hunan province, Yanling, Taoyuandong, 26°29'N, 114°02'E, alt. 900–1000 m, 23-IV-1999, Meicai WEI et. leg.; 4♀, China, Hunan province, Yanling, Taoyuandong, 26°29'N, 114°02'E, alt. 900–1000 m, 20-25-V-1995, Boyi ZHENG leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, 26°38'N, 110°37'E, alt. 1300 m, 2-V-1999, Meicai WEI leg.; 3♀, China, Hunan province, Wugang, Mt. Yun, 26°38'N, 110°37'E, alt. 1100 m, 25-IV-2005, Yingke HE leg.; 1♀, China, Hunan province, Wugang, Mt. Yun, 26°38'N, 110°37'E, alt. 1300 m, 2-V-1999, Meicai WEI leg.; 3♀, China, Hunan province, Wugang, Mt. Yun, 26°38'N, 110°37'E, alt. 1100 m, 25-IV-2005, Yingke HE leg.; 15♀8♂, China, Hunan province, Suining, Mt. Huangsang, 26°26'N, 110°04'E, alt. 600–900 m, 21-IV-2005, Wei XIAO et. leg.; 2♀, China, Hunan province, Sangzhi, Mt. Badagong, 29°40'N, 109°44'E, alt. 1250 m, 13-VIII-2001, Jun WEN & Ningting HUANG leg.; 2♀, China, Hunan province, Shimen, Mt. Huping, 30°07'N, 110°48'E, alt. 1300 m, 31-V-2003, Shouzhu LIU leg.; 1♀, China, Hunan province, Shimen, Mt. Huping, Jiangping, 30°07'N, 110°48'E, alt. 1200–1600 m, 31-V-2004, Hu ZHOU leg.; 1♀, China, Hunan province, Shimen, Mt. Huping, 30°07'N, 110°48'E, alt. 900 m, 1-VI-2003, Yang JIANG leg.; 1♀, China, Hunan province, Liuyang, Mt. Dawei, 28°25'N, 114°05'E, alt. 600–1500 m, 5-V-2005, Renjie BAI leg.; 2♀, China, Hunan province, Liuyang, Mt. Dawei, Limuqiao, 28°25'N, 114°05'E, alt. 980 m, 30-IV-2010, Zejian LI leg.; 1♀, China, Hunan province, Liuyang, Mt. Dawei, Limuqiao, 28°25'N, 114°05'E, alt. 980 m, 7-V-2010, Zejian LI leg.; 6♀, China, Hunan province, Liuyang, Mt. Dawei, Limuqiao, 28°25'N, 114°05'E, alt. 980 m, 18-28-IV-2013, Wei XIAO et. leg.; 2♀, China, Hunan province, Liuyang, Mt. Dawei, Chuan-diwo, 28°25'N, 114°05'E, alt. 120 m, 18-IV-2013, Meicai WEI & Gengyun NIU leg.; 3♀2♂, China, Hunan province, Liuyang, Mt. Dawei, Qixingling, 28°25'N, 114°05'E, alt. 1300 m, 11-IV-2013, Wei XIAO leg.; 1♀35♂, China, Hunan province, Wugang, Mt. Yunshan, Yunfengge, 26°39'N, 110°37'E, alt. 1170 m, 8-16-IV-2013, Zejian LI leg.; 1♀, China, Hunan province, Liuyang, Mt. Dawei, Chunquiao, 28°25'N, 114°05'E, alt. 1300 m, 3-V-2010, Zejian LI leg.; 1♀, China, Hunan province, Liuyang, Mt. Dawei, Town Zhangfang, 28°20'N, 114°11'E, alt. 480 m, 4-V-2010, Zejian LI leg.; 1♀, China, Guizhou province, Mt. Fanjing, 28°00'N, 108°04'E, 14-V-1982; 1♀, China, Guizhou province, Xishui, Linjiang-Pinghe, 28°19'N, 106°12'E, alt. 800–1200 m, 1-VI-2000, Wei XIAO leg.; 1♀, China, Guizhou province, Xishui, Sanchahe, 28°19'N, 106°12'E, alt. 800 m, 24-28-IV-2013, Wei XIAO leg.; 1♀, China, Guizhou province, Mt. Fanjing, 108°04'E, 28°00'N, 14-V-





Figures 159–168. *Pachyprotasis sublicornis*, female: (159) dorsal view; (160) lateral view; (161) mesonotum and metanotum, dorsal view; (162) mesopleuron and metapleuron, lateral view; (163) head, frontal view; (164) head, dorsal view; (165) ovipositor sheath, lateral view; (166) lance; (167) lancet; (168) middle serrulae of lancet.



Figures 169–176. *Pachyprotasis sublicornis*, male: (169) dorsal view; (170) lateral view; (171) mesonotum and metanotum, dorsal view; (172) mesopleuron and metapleuron, lateral view; (173) head, frontal view; (174) head, dorsal view; (175) harpe and parapenis; (176) penis valve.

1982; 1♀, China, Guizhou province, Guiyang, Huaxi, 106°40'E, 26°24'N, 24-VII-1993, Lianmin WANG leg.; 1♀, China, Guizhou province, Zunyi, Xiannudong, 28°36'N, 107°22'E, alt. 600 m, 29-V-2004, Yang LIN leg.; 3♀, China, Guizhou province, Leishan, Mt. Leigong, Fangxiang, 26°21'N, 108°12'E, alt. 1000 m, 3-VI-2005, Minwen LIANG leg.; 1♀, China, Guizhou province, Leishan, Mt. Leigong, 26°21'N, 108°12'E, alt. 1600 m, 3-VI-2005, Fangjun LIAO & Qinhuai LUO leg.; 1♀, China, Guizhou province, Daozhen, Mt. Dashahe, 29°09'N, 107°36'E, 17-VIII-2004, Qinhuai LUO leg.; 9♀, China, Guangdong province, Shixing, Mt. Cheba, 24°42'N, 114°12'E, alt. 400 m, 13-IV-2007, Meicai WEI et. leg.; 1♀, China, Guangxi province, Longsheng, Mt. Huaping, 25°37'N, 109°54'E, alt. 1000 m, 1-IV-2003, Yingke HE leg.; 4♀, China, Jiangxi province, Yichun, Mt. Guan, Station Donghe, 28°32'N, 116°36'E, 17-V-2016, Fuping FANG leg.; 2♀1♂, China, Jiangxi province, Anfu, Mt. Wugong, Valley

Hongyan, 27°29'N, 114°08'E, alt. 580 m, 3-IV-2016, Maoling SHENG & Tao LI leg.; 1♀4♂, China, Jiangxi province, Ziyuan, Mt. Matou, 27°42'N, 117°04'E, 18-IV-2017; 1♀, China, Zhejiang province, Lin'an District, Mt. Tianmu, Xianrending, 30°23'N, 119°41'E, 2-VI-1999; 2♂, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 5-IV-2015, Wei XIAO leg.; 13♀, 8♂, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 23-IV-6-V-2016, Zejian LI et. leg.; 6♀, 36♂, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 405 m, 6-IV-6-V-2017, Zejian LI et. leg.; 3♀, 36♂, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 31-III-20-IV-2018, Zejian LI et. leg.; 5♂, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Chanyuan, 30°19'N, 119°26'E, alt. 362 m, 8-IV-2019, Zejian LI

et. leg.; 1♀, China, Zhejiang province, Kaihua, Villa, 29°14'N, 118°07'E, alt. 316 m, 18–20-IV-2018, Zejian LI leg.; 1♂, China, Zhejiang province, Longquan, Mt. Fengyang, Village Lu'ao, 27°55'N, 119°12'E, alt. 1100 m, 22-IV-2017, Zejian LI et. leg.; 1♂, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple kaishanlao, 119°26'E, 30°19'N, alt. 1106 m, 28–29-IV-2017, Zejian LI et. leg.; 2♀, China, Zhejiang province, Yuyao, Mt. Siming, 29°42'N, 121°10'E, alt. 530 m, 3-V-2016, Meicai WEI leg.; 2♀, China, Zhejiang province, Fenghua, Xikou, 29°43'N, 121°04'E, alt. 740 m, 4-V-2016, Meicai WEI leg. (ASMN, LSAF).

### *Pachyprotasis subtilissima* Malaise, 1945

Figs 177–186

*Pachyprotasis subtilissima* Malaise, 1945: 150–151; Saini, 2007: 70, figs 159, 163, 167, 175, 196, 181, 202; Saini & Kalia, 1989: 150–151, figs 140, 145, 154, 166, 176.

Diagnosis. Female. Body length 8.5 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: head yellowish-white, only apex of frontal field to postocellar area black; ventral side of thorax and abdomen entirely yellowish-white; lateral part of median mesoscutal lobe with broad yellowish-white “V” spot, central part of lateral mesoscutal lobe with yellowish-white spot; central part of each tergum with a broad yellowish-white triangular spot; metacoxa to basal 3/4 of metafemur yellowish-white, apical 1/4 of metafemur, metatibia except extreme apex and basal half of metatarsomere 1 reddish-brown, apical half of metatarsomere 1 to metatarsomere 5 except extreme apex yellowish-white; punctures on head and mesepisternum small, shallow and indistinct.

Male. Unknown.

Variation. Body length of female 8.0–8.5 mm.

Distribution. China (Tibet), India, Burma.

Non-type material. 1♀, China, Tibet Autonomous Region, Yadong, 27°29'N, 88°54'E, alt. 2800 m, 2-VI-1992, Tianyu GUO leg.; 1♀, China, Tibet Autonomous Region, Linzhi, Tibet, 29°57'N, 95°22'E, alt. 2650 m, 14-VII-2013, Yihai ZHONG & Ping HU leg. (ASMN).

### *Pachyprotasis flavipes* (Cameron, 1902)

Figs 187–196

*Lithartia flavipes* Cameron, 1902: 441–442; Malaise, 1945: 149–150; Saini & Kalia, 1989: 164–165, figs 141, 145, 155, 167, 176; Saini, 2007: 81, figs 159, 163, 169, 176, 181, 196, 202.

Diagnosis. Female. Body length 7.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesopleuron white, upper corner black; apex of median mesoscutal lobe and center of lateral mesoscutal lobe white; central part of each tergum with a broad yellowish-white triangular spot, metacoxa to basal 3/7 of metafemur white, apical 3/7 of metafemur, basal 4/5 of metatibia and metatarsomere 1 reddish-brown, apical 1/5 of metatibia and

apical part of metatarsomere 5 black, metatarsomeres 2–4 and basal part of metatarsomere 5 white; punctures on mesepisternum extremely small, shallow and indistinct. Male. Unknown.

Variation. Body length of female 7.0–7.2 mm.

Distribution. China (Qinghai, Sichuan), India.

Non-type material. 2♀, China, Qinghai province, Huzhu, Mt. Bei, 36°45'N, 102°32'E, 16-VI-1974, Ying MA & Fan FAN leg.; 1♀, China, Sichuan province, Tianquan, River Laba, 30°01'N, 102°78'E, alt. 1900–2200, 13-VII-2003, Wei XIAO leg. (ASMN).

### *Pachyprotasis weni* Wei, 1998

Figs 197–206

*Pachyprotasis weni* Wei, 1998 in Wei & Nie 1998a: 164.

Diagnosis. Female. Body length 8.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesopleuron, tegula, median and lateral mesoscutal lobe entirely black, without white; inner and hind orbit black, lower part white; hind coxa, trochanter, basal 1/10 of femur, apical 1/3 of tarsomere 1, tarsomeres 2–4 and tarsomere 5 except extreme apex white, femur except basal 1/10 and tibia except extreme apex reddish-brown, outer side of coxa with a narrow black stripe, inner side of femur with black spot on apex; punctures on mesepisternum extremely small, shallow and indistinct, on dorsal part of head small and dense; front wing with middle petiole of anal cell slightly shorter than length of basal anal cell, twice the length of vein R+M.

Male. Unknown.

Variation. Body length of female 7.5–8.5 mm.

Distribution. China (Henan, Hubei, Sichuan, Tibet), India.

Type material. Holotype, ♀, China, Henan province, Songxian, 33°54'N, 111°59'E, 19-VII-1996, Meicai WEI leg. (ASMN). Paratype, 1♀, China, Henan province, Luanchuan, 33°42'N, 111°44'E, 13-VII-1996, Jun WEN leg. (ASMN).

Non-type material. 1♀, China, Hubei province, Mt. Shennongjia, Qianjiaping, 31°24'N, 110°24'E, alt. 1530 m, 22-V-2010, Zejian LI leg.; 1♀, China, Sichuan province, Chongzhou, Mt. Anzihe, Lihuan, 30°46'N, 103°13'E, alt. 1750 m, 15-VII-2016, Kaiwen GAO leg.; 5♀, China, Sichuan province, Mt. Emei, Leidongping, 29°06'N, 103°04'E, alt. 2350 m, 5–7-VII-2009, Yihai ZHONG & Zejian LI leg.; 1♀, China, Tibet Autonomous Region, Motuo, 29°48'N, 95°41'E, alt. 2937 m, 18-VI-2009, Meicai WEI leg.; 1♀, China, Shaanxi province, Meixian, Mt. Taibai, Kaitianguan, 34°01'N, 107°51'E, alt. 1852 m, 7-VI-2014, Mengmeng LIU & Ting LIU leg. (ASMN, LSAF).

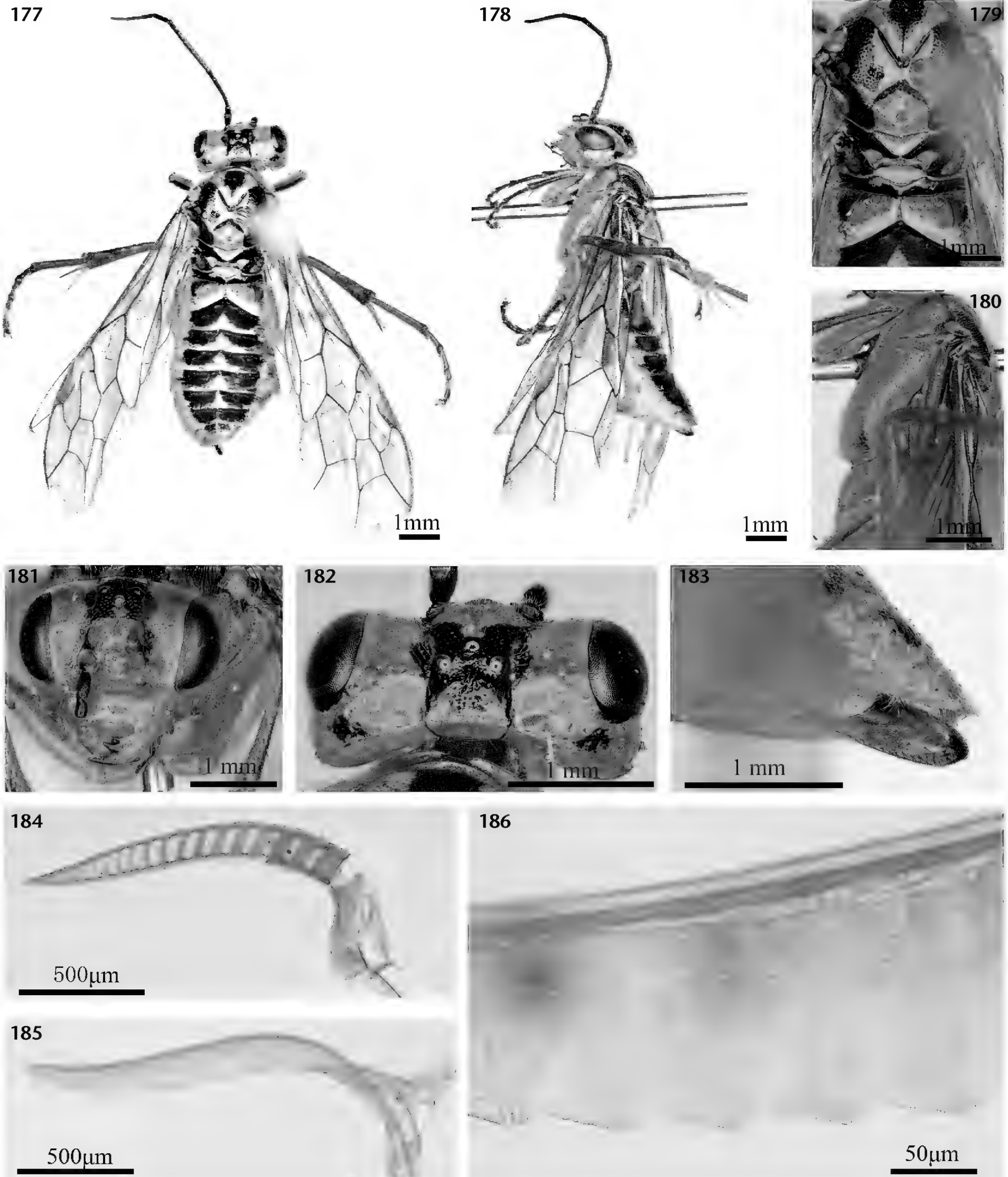
### *Pachyprotasis magnilabria* Wei, 1998

Figs 207–216

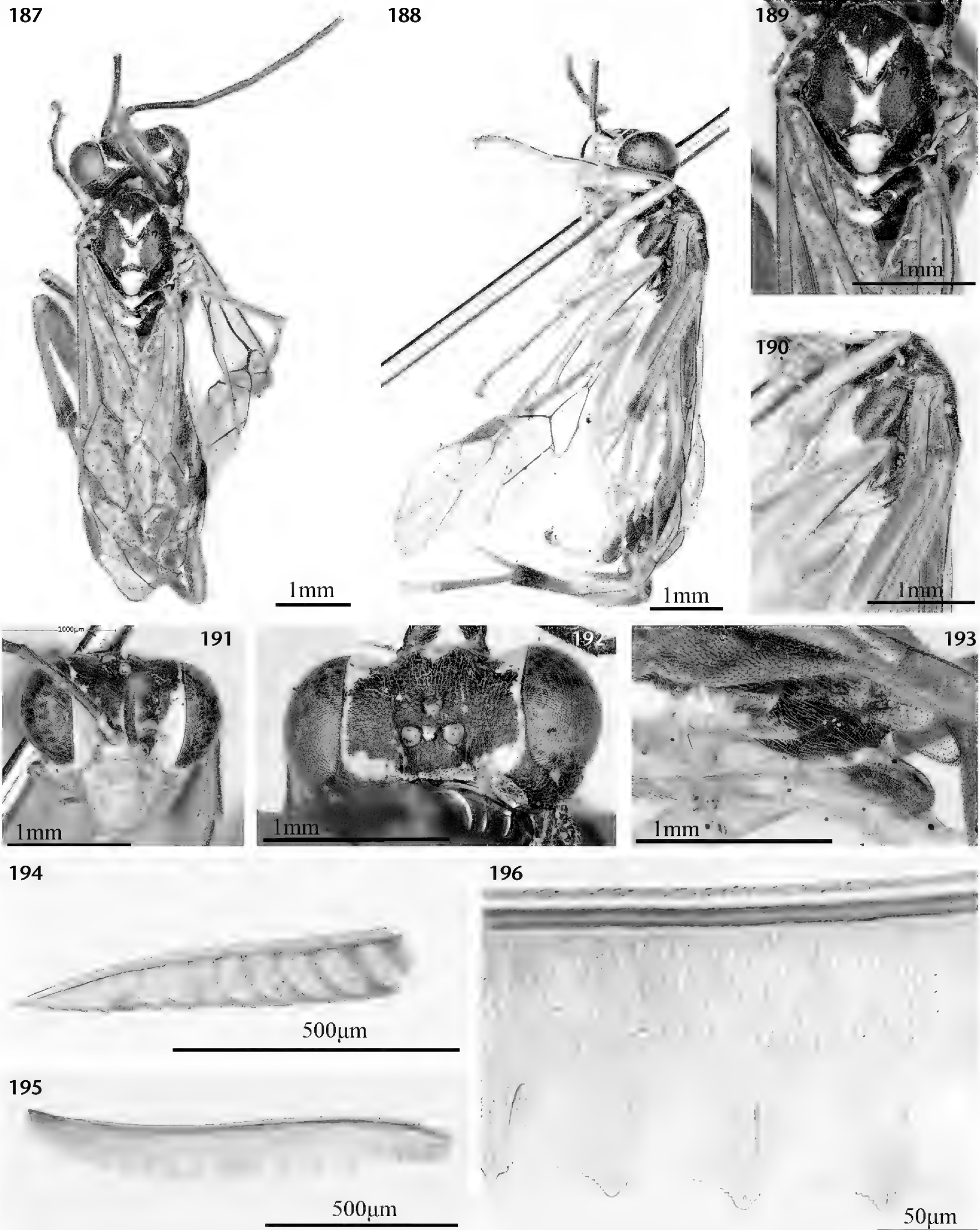
*Pachyprotasis magnilabria* Wei, 1998 in Wei & Nie, 1998a: 163–164.

Diagnosis. Female. Body length 8.0 mm. This species is close to *P. weni* Wei in general appearance. In addition to the characters given in the key, the following characters are



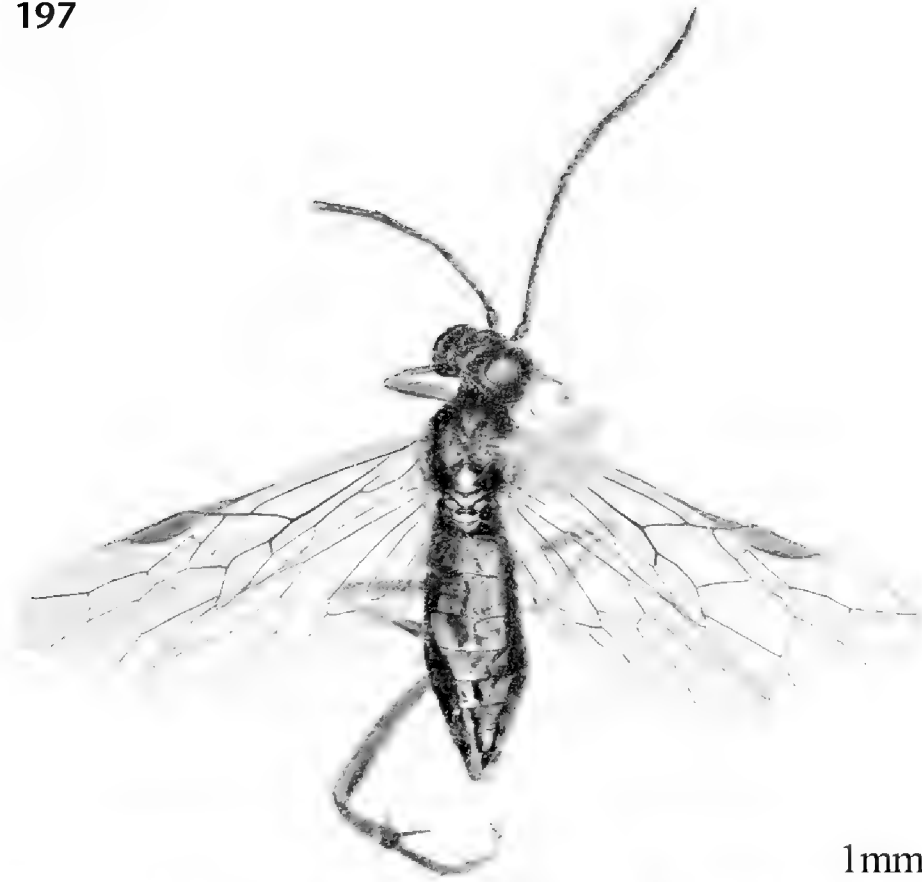


Figures 177–186. *Pachyprotasis subtilissima*, female: (177) dorsal view; (178) lateral view; (179) mesonotum and metanotum, dorsal view; (180) mesopleuron and metapleuron, lateral view; (181) head, frontal view; (182) head, dorsal view; (183) ovipositor sheath, lateral view; (184) lance; (185) lancet; (186) middle serrulae of lancet.



Figures 187–196. *Pachyprotasis flavipes*, female: (187) dorsal view; (188) lateral view; (189) mesonotum and metanotum, dorsal view; (190) mesopleuron and metapleuron, lateral view; (191) head, frontal view; (192) head, dorsal view; (193) ovipositor sheath, lateral view; (194) lance; (195) lancet; (196) middle serrulae of lancet.

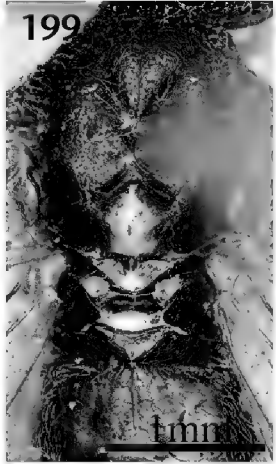
197



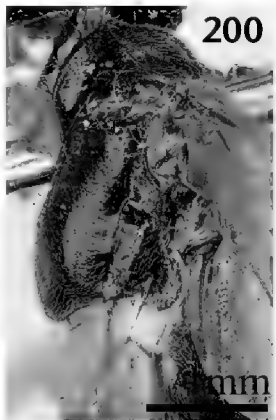
198



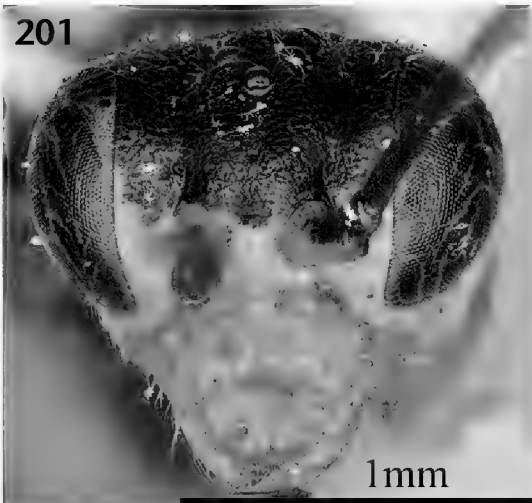
199



200



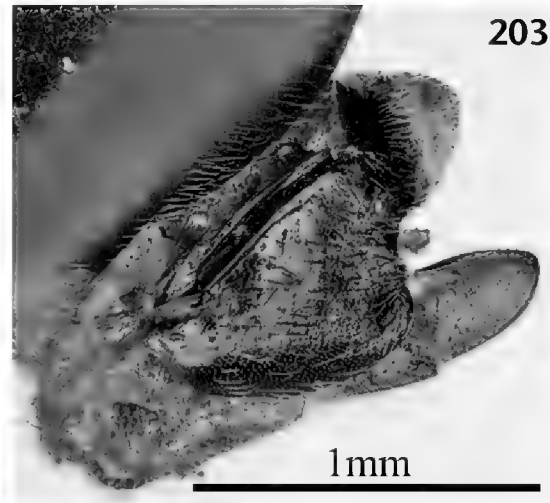
201



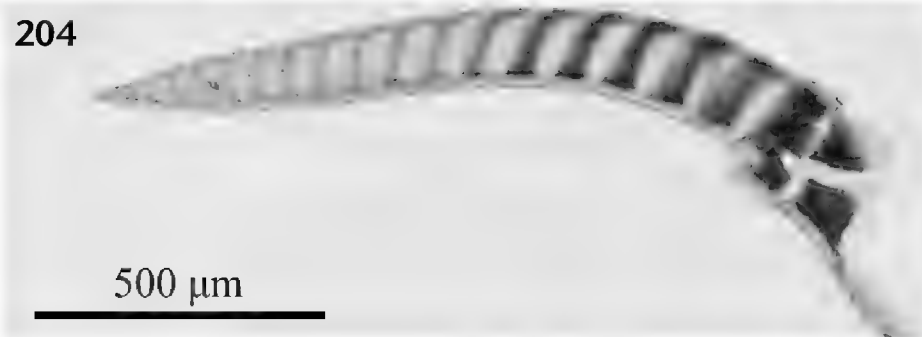
202



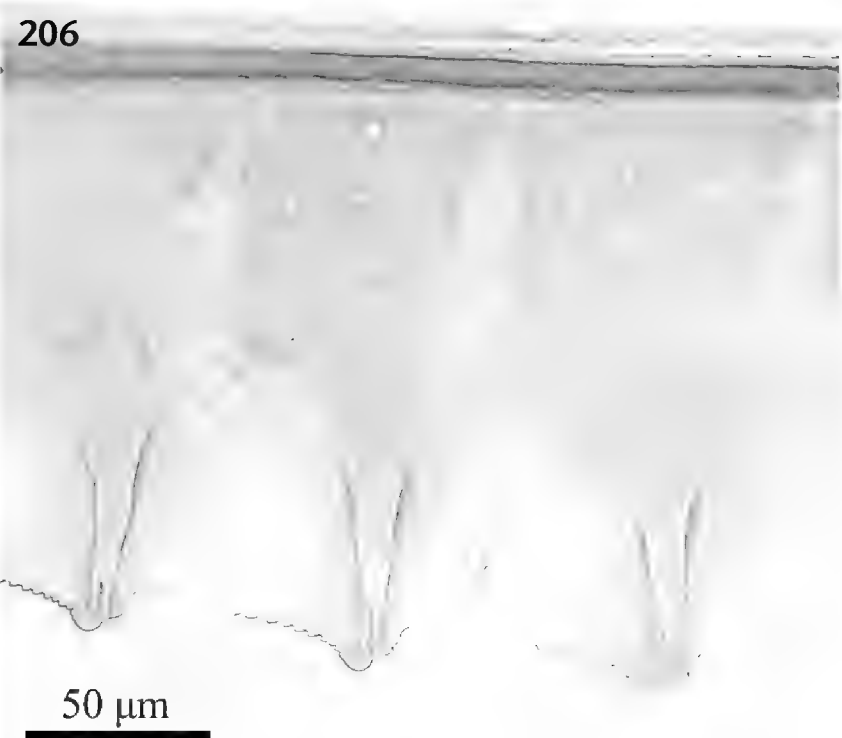
203



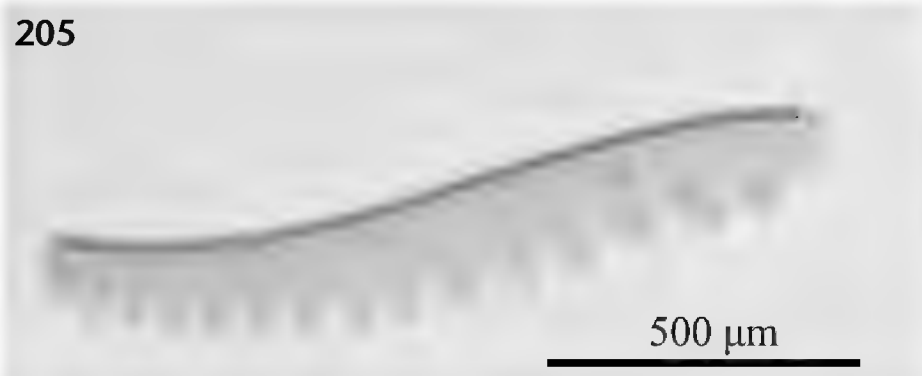
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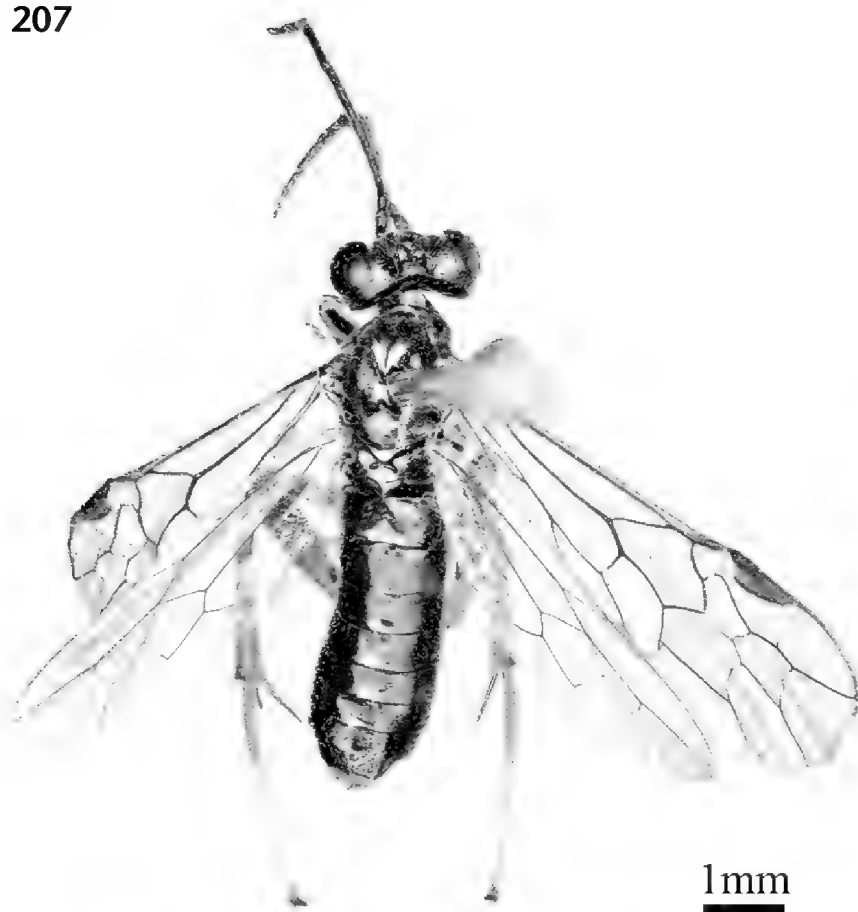
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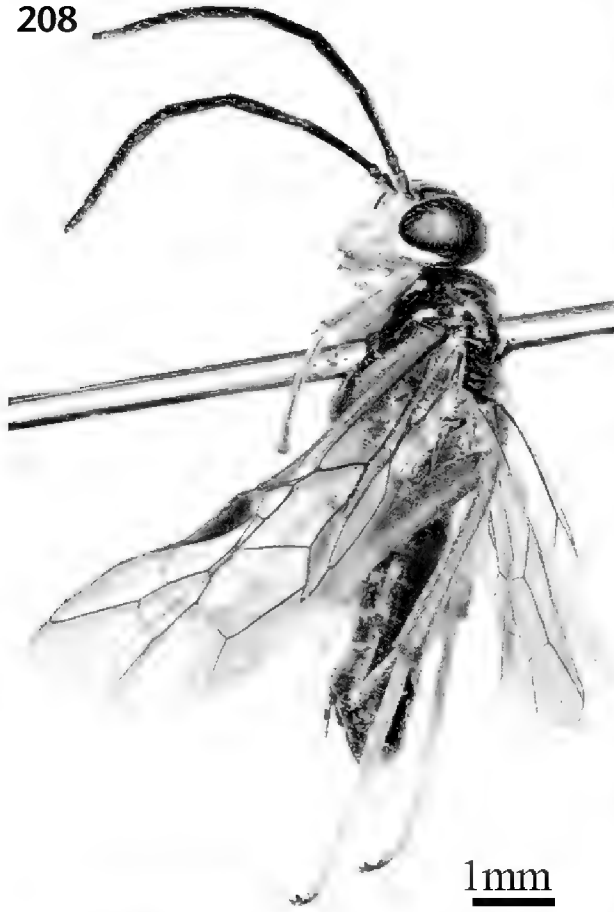
Figures 197–206. *Pachyprotasis weni*, female: (197) dorsal view; (198) lateral view; (199) mesonotum and metanotum, dorsal view; (200) mesopleuron and metapleuron, lateral view; (201) head, frontal view; (202) head, dorsal view; (203) ovipositor sheath, lateral view; (204) lance; (205) lancet; (206) middle serrulae of lancet.



207



208



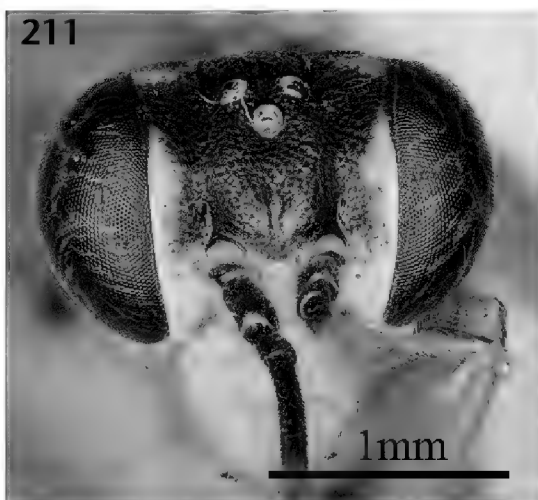
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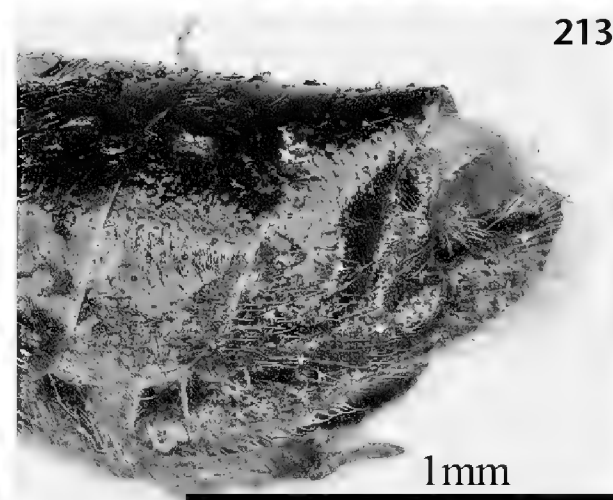
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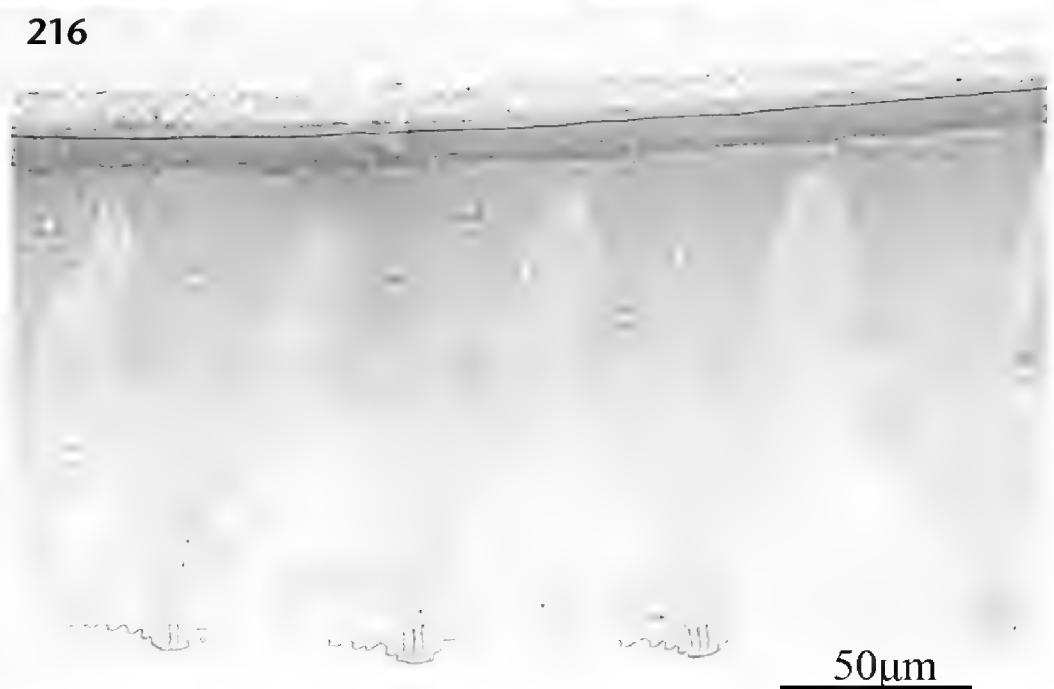
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Figures 207–216. *Pachyprotasis magnilabria*, female: (207) dorsal view; (208) lateral view; (209) mesonotum and metanotum, dorsal view; (210) mesopleuron and metapleuron, lateral view; (211) head, frontal view; (212) head, dorsal view; (213) ovipositor sheath, lateral view; (214) lance; (215) lancet; (216) middle serrulae of lancet.

diagnostic: basal part of tegula and apex of median mesoscutal lobe white; upper part of inner orbit with narrow white stripe.

Male. Unknown.

Variation. Body length of female 7.5–8.0 mm.

Distribution. China (Henan).

Type material. Holotype, ♀, China, Henan, province, Luanchan, 33°42'N, 111°44'E, 13-VII-1996, Meicai WEI leg. (SMN). Paratype, 1♀, China, Henan province, Songxian, 33°54'N, 111°59'E, 19-VII-1996, Meicai WEI leg. (SMN).

### *Pachyprotasis henanica* Wei & Zhong, 2002

Figs 217–234

*Pachyprotasis henanica* Zhong & Wei, 2002: 217–218, fig. 217.

Diagnosis. Female (Figs 217–226). Body length 8.5 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesepisternum black, central part white; terga black, central parts of terga 4–7 each with a triangular white spot; hind coxa white, ventral part with black band, basal 1/5 of femur white, remaining of femur reddish-brown, without black, tibia and tarsus reddish-brown, apical 1/10 of tibia black; punctures on mesepisternum small, shallow; frontal area concave, median fovea ditch-like, deeply extending to median ocellus.

Male (Figs 227–234). Body length 8.0 mm. Color and structure similar to female, except: middle femur white, without red; hind legs black, only apical 3/4 of femur reddish-brown on ventral part, white are: apex of coxa, trochanter, inner and ventral part of femur on basal 1/4, apex of tarsomere 1 to base of tarsomere 5; antennomeres strongly compressed.

Variation. Body length of female 8.2–8.5 mm.

Distribution. China (Anhui, Gansu, Guizhou, Henan, Hunan, Zhejiang).

Type material. Holotype, ♀, China, Henan province, Songxian, 33°54'N, 111°59'E, 18-VII-1996, Meicai WEI leg. (SMN).

Non-type material. 11♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1500 m, 20-VII-2003, Meicai WEI leg.; 2♀, China, Henan province, Songxian, 33°54'N, 111°59'E, alt. 1500–1600 m, 15–17-VII-2004, ShaobingZHANG & Weixing LIU leg.; 1♂, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1854 m, 25-VI-2006, Qing YANG leg.; 1♀, China, Gansu province, Tianshui, Mt. Xiaolong, 34°16'N, 106°08'E, alt. 1409 m, 7-VII-2007, Yihai ZHONG leg.; 1♀, China, Hunan province, Sangzhi, Mt. Tianping, 29°47'N, 110°00'E, 7-VI-1981, Xinwang TONG leg.; 1♀, China, Zhejiang province, Lin'an District, Mt. Tianmu, 30°23'N, 119°42'E, 25-VI-1984, Xiliang ZHU leg.; 1♀, China, Zhejiang province, Lin'an District, Mt. Tianmu, 30°23'N, 119°42'E, 8-VI-1983, Yun MA leg.; 1♀, China, Zhejiang province, Lin'an District, Mt. Tianmu, 30°20'N, 119°26'E, 29-VI-1995; 2♀, China, Zhejiang province, Lin'an District, Mt. Tianmu, 30°23'N, 119°42'E, 2–4-VI-1990, Xinliang WANG et. leg.; 3♀, China, Anhui province, Yuexi, Mt.

Yaoluoping, 31°00'N, 116°08'E, alt. 700 m, 12–14-VI-2007, Yi XU & Xiaoyu JIANG leg.; 2♀, China, Guizhou province, Zunyi, Dashahe, 29°09'N, 107°36'E, alt. 1300 m, 24–26-V-2004, Yang LIN leg.; 1♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, Temple Kaishanlao, 30°20'N, 119°26'E, alt. 1106 m, 30-V-2016, Zejian LI & Mengmeng LIU leg. (SMN, LSAF).

### *Pachyprotasis longipetiolata* Zhong, Li & Wei, 2018

Figs 235–252

*Pachyprotasis longipetiolata* Zhong et al., 2018: 289–291, fig. 289.

Diagnosis. Female (Figs 235–244). Body length 9.5 mm. This species is similar to *P. weni* Wei in general appearance. In addition to the characters given in the key, the following characters are diagnostic: central part of mesepisternum black; metafemur black near the base, inner side with large black band, most of the apical part of tibia black.

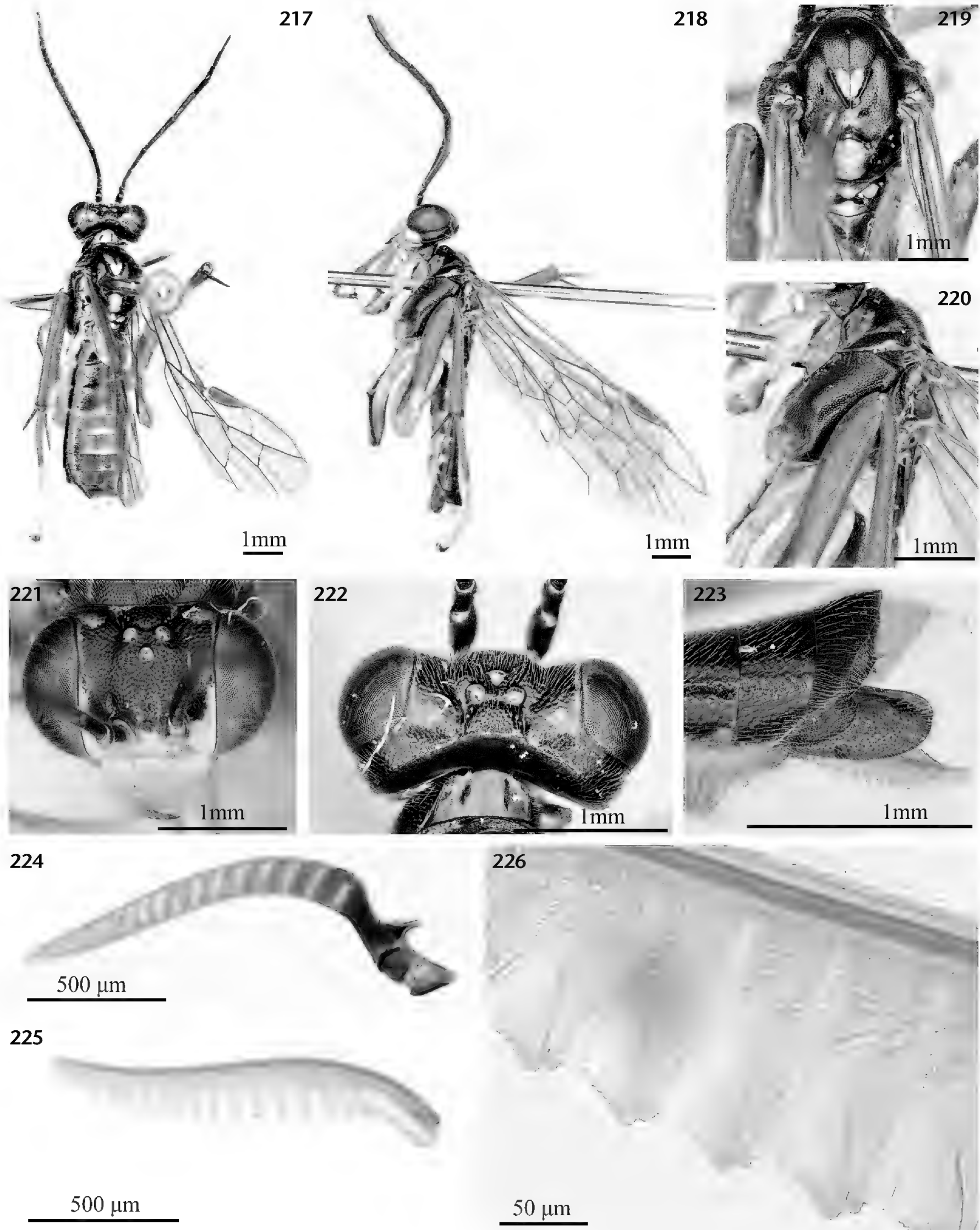
Male (Figs 245–252). Body length 7.0 mm. Color and structure similar to female, except: anterior part of mesepisternum with irregular white spot, central part sometimes with white spot; dorsal part of thorax and abdomen black, without distinct white spot; labrum and clypeus white, without brown spot; antennomeres strongly compressed.

Variation. Body length of female 8.5–10.0 mm and male 6.5–7.0 mm.

Distribution. China (Hubei, Hunan, Sichuan, Yunnan, Zhejiang).

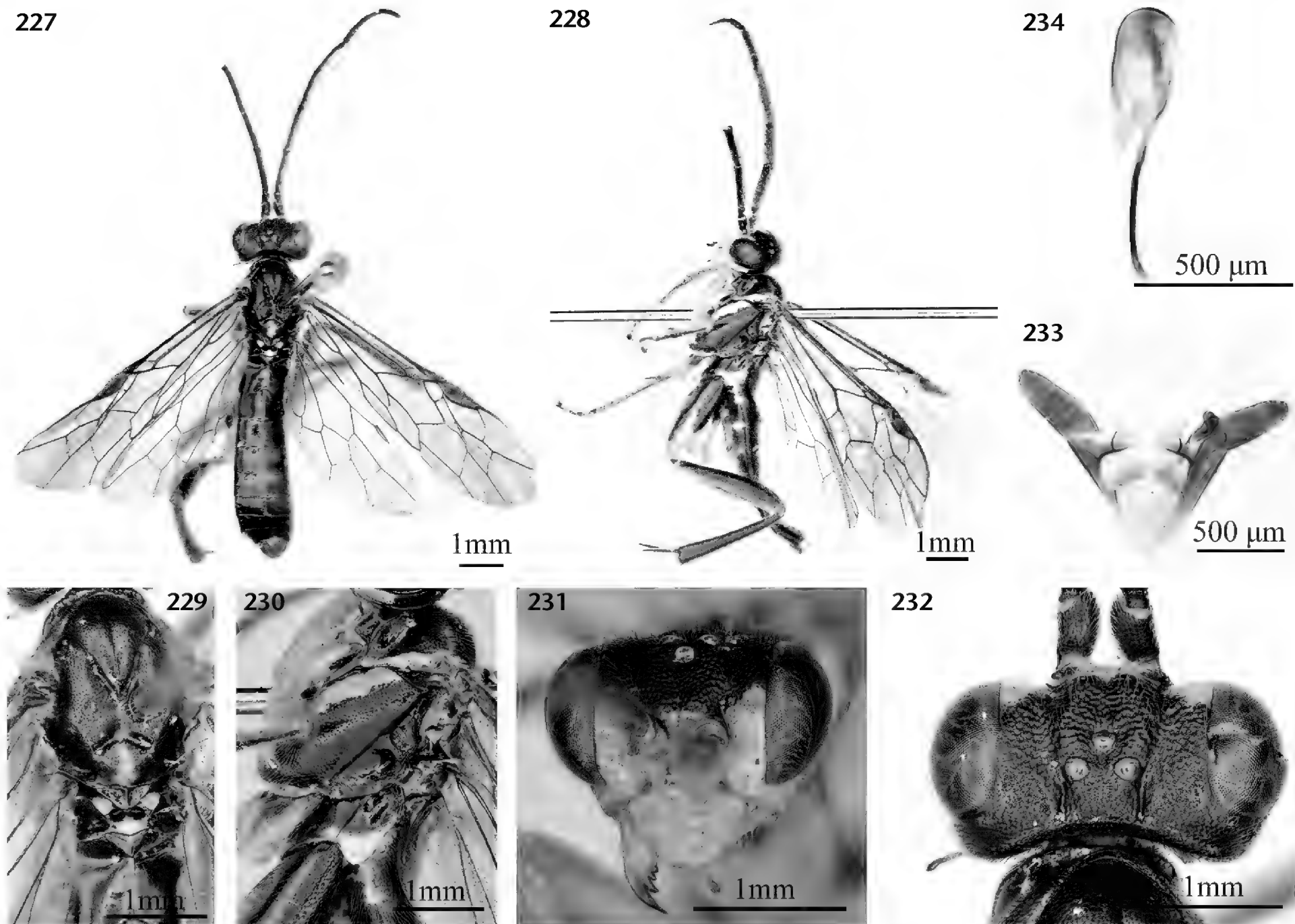
Type material. Holotype ♀, China, Hunan province, Shimen, Mt. Huping, Jiangping, 30°07'N, 110°48'E, alt. 1200–1600 m, 9-VI-2004, Yang JIANG leg. (SMN). Paratypes, 1♀, China, Hunan province, Shimen, Mt. Huping, 30°07'N, 110°48'E, alt. 1300 m, 31-V-2003, Yang JIANG leg.; 2♀, China, Hunan province, Shimen, Mt. Huping, 30°07'N, 110°48'E, alt. 900–1400 m, 1-VI-2003, Yang JIANG leg.; 3♀, China, Hunan province, Shimen, Mt. Huping, Jiangping, 30°07'N, 110°48'E, alt. 1200–1600 m, 9-V-2003, Hu ZHOU leg. (SMN).

Non-type material. 1♀, China, Zhejiang province, Lin'an District, Mt. Xitianmu, 30°20'N, 119°26'E, 2-VI-1990, Haijun HU leg.; 3♀, China, Hunan province, Pingjiang, Mt. Mufu, 28°58'N, 113°49'E, alt. 1100 m, 20–22-V-2008, Yuan ZHANG 7 Fei LIU leg.; 4♀, China, Hunan province, Pingjiang, Mt. Mufu, 28°58'N, 113°49'E, alt. 1350 m, 20–22-VI-2008, Yuan ZHANG & Yihai ZHONG leg.; 3♀, China, Hunan province, Pingjiang, Mt. Mufu, 28°58'N, 113°49'E, alt. 1604 m, 22-V-2008, Yuan ZHANG leg.; 2♀, China, Hunan province, Pingjiang, Mt. Mufu, 28°58'N, 113°49'E, alt. 1100 m, 23-IV-2008, Yuan ZHANG leg.; 1♀, China, Hunan province, Pingjiang, Mt. Mufu, 28°58'N, 113°49'E, alt. 860 m, 24-IV-2008, Zejian LI leg.; 1♂, China, Hunan province, Liuyang, Mt. Dawei, Limuqiao, 28°58'N, 113°49'E, alt. 980 m, 2-V-2010, Zejian LI leg.; 3♀, China, Hubei province, Mt. Shennongjia, Qianjiaping, 31°24'N, 110°24'E, alt. 1789 m, 3–7-VII-2009, Fu ZHAO & Zhao JIAO leg.; 4♀, China, Hubei province, Mt. Shennongjia, Banqiaohe, 31°23'N, 110°12'E, alt.



Figures 217–226. *Pachyprotasis henanica*, female (217) dorsal view; (218) lateral view; (219) mesonotum and metanotum, dorsal view; (220) mesopleuron and metapleuron, lateral view; (221) head, frontal view; (222) head, dorsal view; (223) ovipositor sheath, lateral view; (224) lance; (225) lancet; (226) middle serrulae of lancet.





Figures 227–234. *Pachyprotasis henanica*, male: (227) dorsal view; (228) lateral view; (229) mesonotum and metanotum, dorsal view; (230) mesopleuron and metapleuron, lateral view; (231) head, frontal view; (232) head, dorsal view; (233) harpe and parapenis; (234) penis valve.

1250 m, 30-V-2008, Fu ZHAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, Qianjiaping, 31°23'N, 110°12'E, alt. 1150 m, 16-VI-2009, Fu ZHAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, Caiqi, 31°30'N, 110°26'E, alt. 1981 m, 21-VII-2009, Fu ZHAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, Zhangbaohe, 31°26'N, 110°24'E, alt. 1156 m, 13-VI-2009, Fu ZHAO leg.; 1♂, China, Hubei province, Mt. Shennongjia, Jinhoulung, 31°28'N, 110°18'E, alt. 2212 m, 8-VII-2008, Fu ZHAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, Laojunshan, 31°29'N, 110°23'E, alt. 841 m, 16-VI-2008, Zhao JIAO leg.; 1♀, China, Yunnan province, Tengchong, Town Houqiao, 25°19'N, 98°17'E, alt. 2196 m, 1-VI-2009, Meicai WEI leg.; 3♀, China, Hubei province, Mt. Shennongjia, Yaolan'gou, 31°29'N, 110°23'E, alt. 1430 m, 19–29-VII-2009, Fu ZHAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, Meirengou, 31°29'N, 110°23'E, alt. 1164 m, 16-VI-2009, Fu ZHAO leg.; 1♀, China, Hubei province, Lichuan, Shuishanba, 30°09'N, 108°37'E, 25-VIII-2009, Chuanren LI leg.; 1♀, China, Sichuan province, Hongya, Mt. Wawu, 29°42'N, 102°57'E, alt. 1920 m, 5-VII-2009, Meicai WEI leg.; 1♀1♂, China,

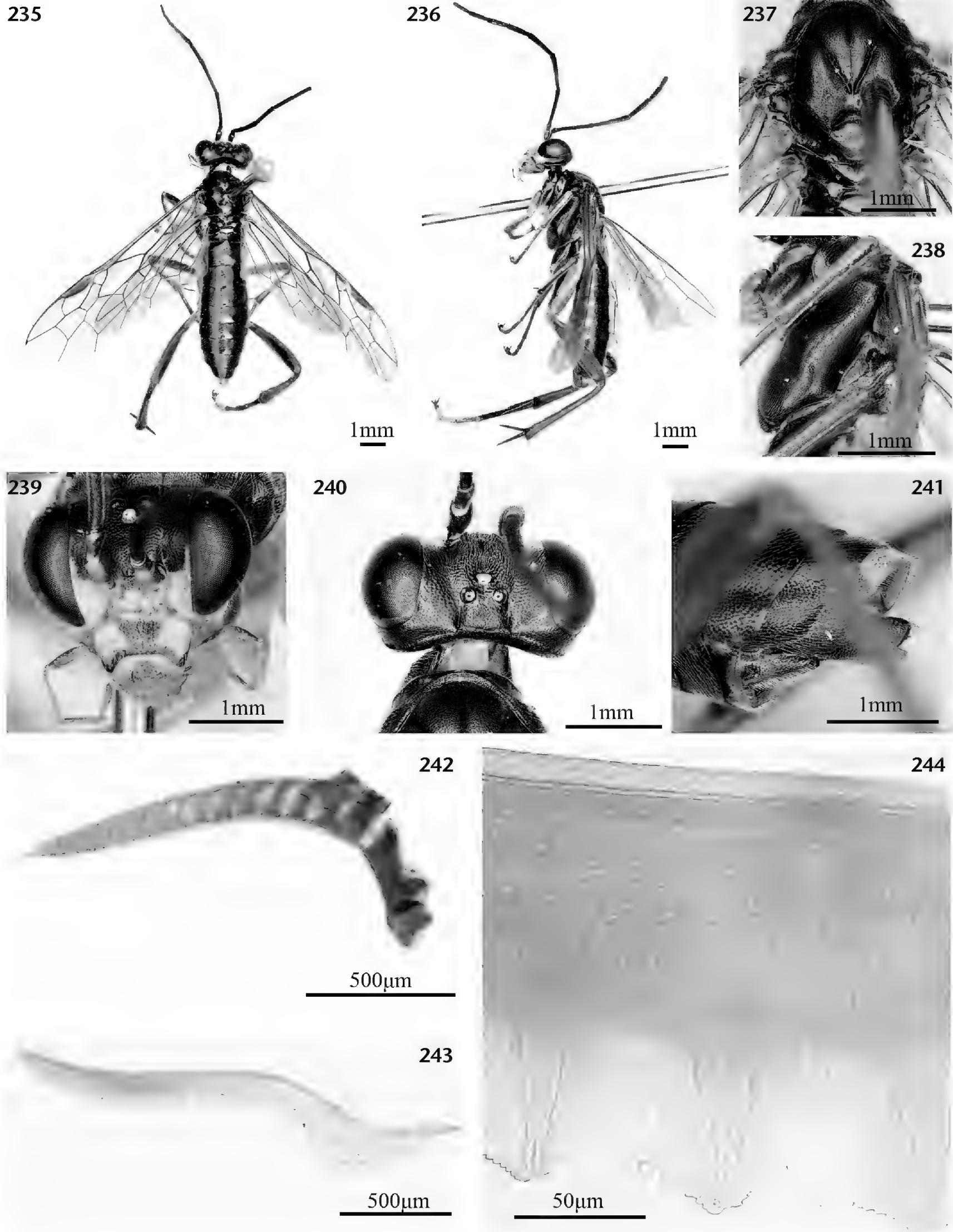
Sichuan province, Meishan, Mt. Emei, Leidongping, 29°06'N, 103°04'E, alt. 2350 m, 6–7-VII-2009, Yihai ZHONG & Zejian LI leg.; 1♀, China, Sichuan province, Chongzhou, Mt. Anzihe, Lihuan, 30°46'N, 103°13'E, alt. 1750 m, 15-VII-2016, Kaiwen GAO leg.; 1♀, China, Yunnan province, Lijiang, Mt. Yulong, 27°08'N, 100°12'E, alt. 2945 m, 6-VI-2009, Meicai WEI leg. (ASMN, LSAF).

### *Pachyprotasis subtilis* Malaise, 1945

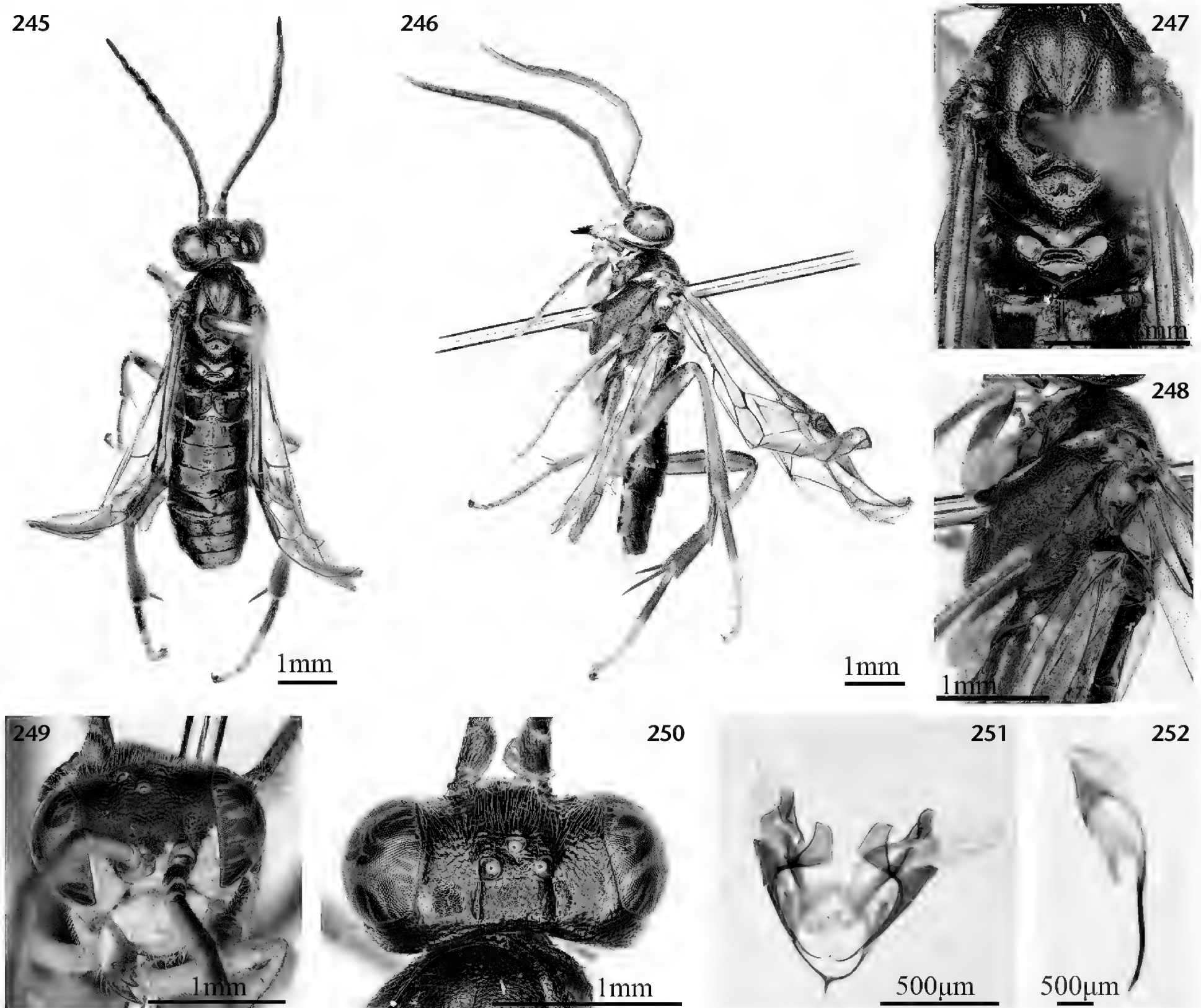
Figs 253–270

*Pachyprotasis subtilis* Malaise, 1945:150; Wei, 2006: 622; Saini & Kalia, 1989: 151–152, figs 140, 145, 154, 166, 176, 167, 176; Saini, 2007: 72, figs 161, 164, 168, 175, 177, 185, 194, 204.

**Diagnosis.** Female (Figs 253–262). Body length 8.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesepisternum black, without white; terga black, extreme apex of each tergum white; hind coxa, apical 2/3 of femur and tibia except extreme apex reddish-brown, trochanter, basal 1/3 of femur,



Figures 235–244. *Pachyprotasis longipetiolata*, female: (235) dorsal view; (236) lateral view; (237) mesonotum and metanotum, dorsal view; (238) mesopleuron and metapleuron, lateral view; (239) head, frontal view; (240) head, dorsal view; (241) ovipositor sheath, lateral view; (242) lance; (243) lancet; (244) middle serrulae of lancet.



Figures 245–252. *Pachyprotasis longipetiolata*, male: (245) dorsal view; (246) lateral view; (247) mesonotum and metanotum, dorsal view; (248) mesopleuron and metapleuron, lateral view; (249) head, frontal view; (250) head, dorsal view; (251) harpe and parapenis; (252) penis valve.

apex of tarsomere 1 to base of tarsomere 5 white, outer part of trochanter and femur with black narrow band; punctures on mesepisternum moderate.

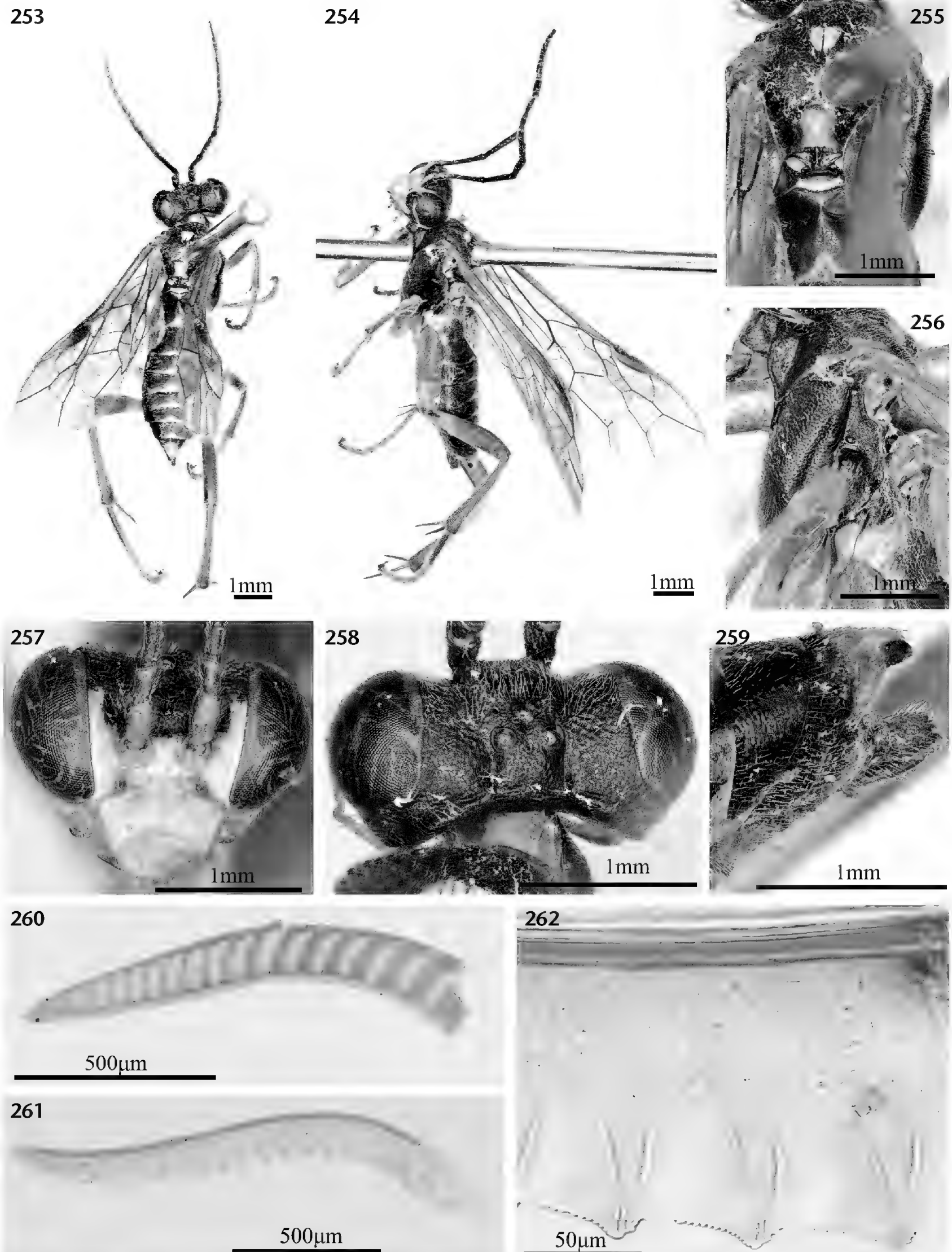
Male (Figs 263–270). Body length 7.0 mm. Color and structure similar to female, except: tegula white, apex black; fore and middle legs white, outer base of coxae, dorsal side of femora to tarsi with narrow black stripes, metacoxa blackish-brown, dorsal part reddish-brown; antennomeres strongly compressed.

Variation. Body length of female 7.5–8.5 mm and male 6.5–7.5 mm.

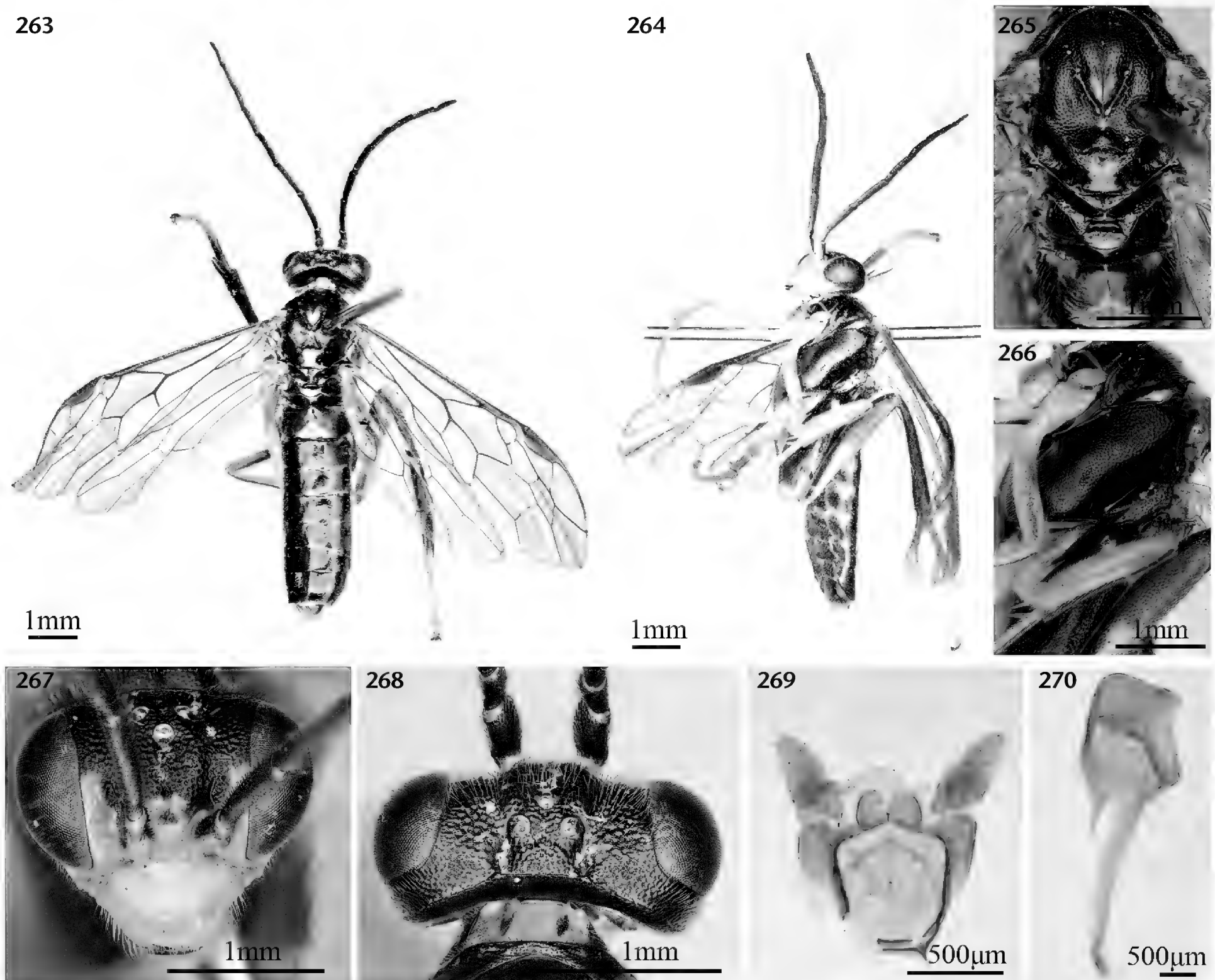
Distribution. China (Gansu, Guizhou, Henan, Shaanxi, Sichuan), Burma-Yunnan frontier, India.

Non-type material. 2♀, 1♂, China, Henan province, Songxian, 33°54'N, 111°59'E, 15–18-VII-1996, Meicai WEI leg.; 4♀, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1300–1600 m, 12–17-VII-1998, Meicai WEI et. leg.; 3♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1500–1600 m, 18–22-VII-2002, Jigang JIANG leg.; 13♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1300–1600 m, 13–15-VII-2004, Shaobing ZHANG & Weixing LIU leg.; 5♀, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1300–1700 m, 22–24-VII-2004, Shaobing ZHANG & Weixing LIU leg.; 1♀, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt.





Figures 253–262. *Pachyprotasis subtilis*, female: (253) dorsal view; (254) adult female, lateral view; (255) mesonotum and metanotum, dorsal view; (256) mesopleuron and metapleuron, lateral view; (257) head, frontal view; (258) head, dorsal view; (259) ovipositor sheath, lateral view; (260) lance; (261) lancet; (262) middle serrulae of lancet.



Figures 263–270. *Pachyprotasis subtilis*, male: (263) dorsal view; (264) lateral view; (265) mesonotum and metanotum, dorsal view; (266) mesopleuron and metapleuron, lateral view; (267) head, frontal view; (268) head, dorsal view; (269) harpe and parapenis; (270) penis valve.

1300 m, 2-VI-2006, Yihai ZHONG leg.; 2♀, China, Gansu province, Tianshui, Forestry Farm, 34°22'N, 106°01'E, alt. 1330 m, 10-VII-2009, Xun ZHU leg.; 1♀, China, Shaanxi province, Huayin, Mt. Hua, 34°29'N, 110°00'E, alt. 1300–1600 m, 12-VII-2005, Xun ZHU leg.; 1♀, China, Guizhou province, Mt. Fanjin, 28°00'N, 108°04'E, 13-VII-1983, Xuexin CHEN leg.; 1♀, China, Sichuan province, Chongzhou, Mt. Anzihe, Lihuan, 30°46'N, 103°13'E, alt. 1750 m, 21-VII-2016, Kaiwen GAO leg. (ASMN).

### *Pachyprotasis acutilabria* Wei, 1998

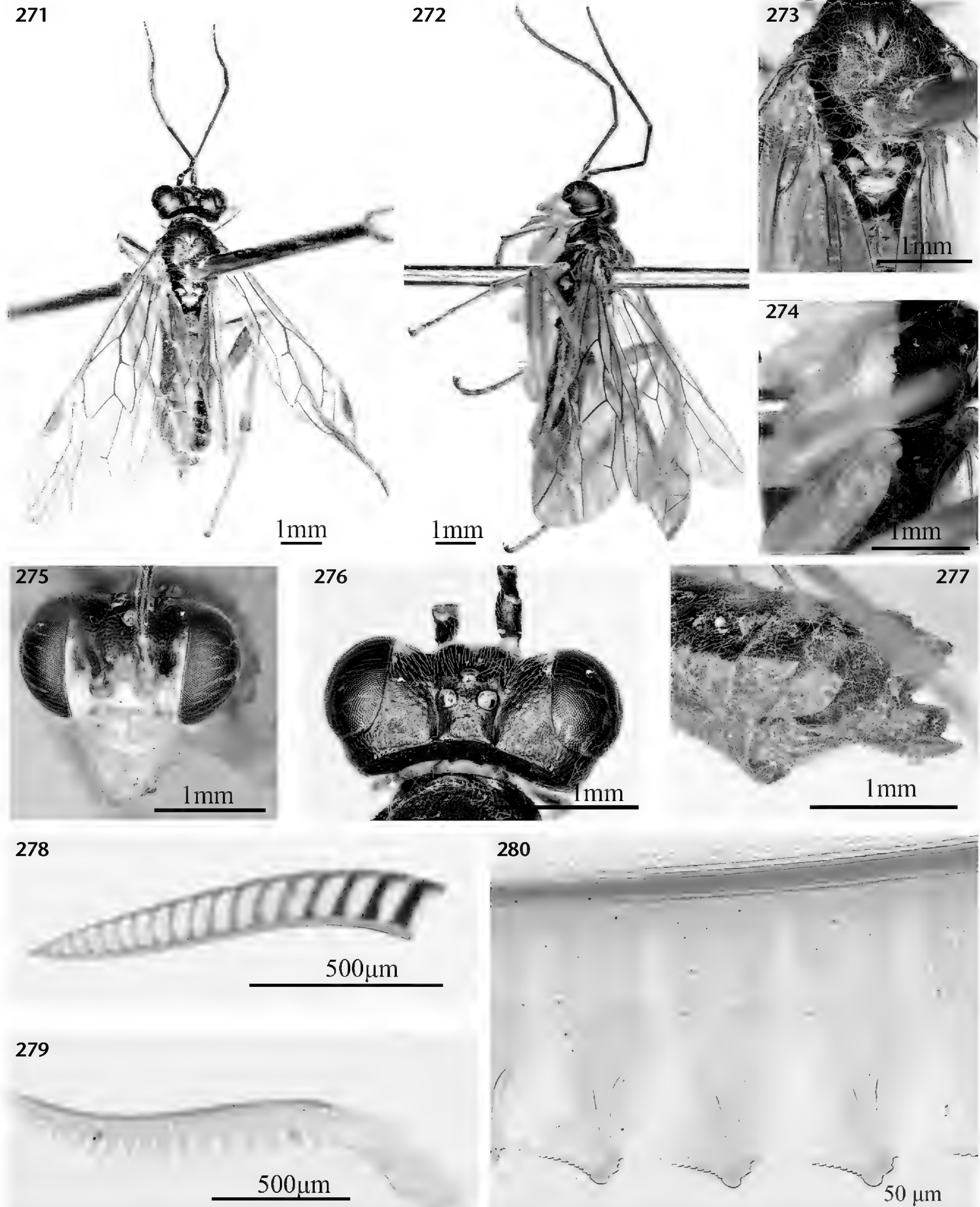
Figs 271–288

*Pachyprotasis acutilabria* Wei, 1998 in Wei & Nie, 1998a: 164–165.

Diagnosis. Female (Figs 271–280). Body length 8.0 mm. This species can be distinguished from other similar species of

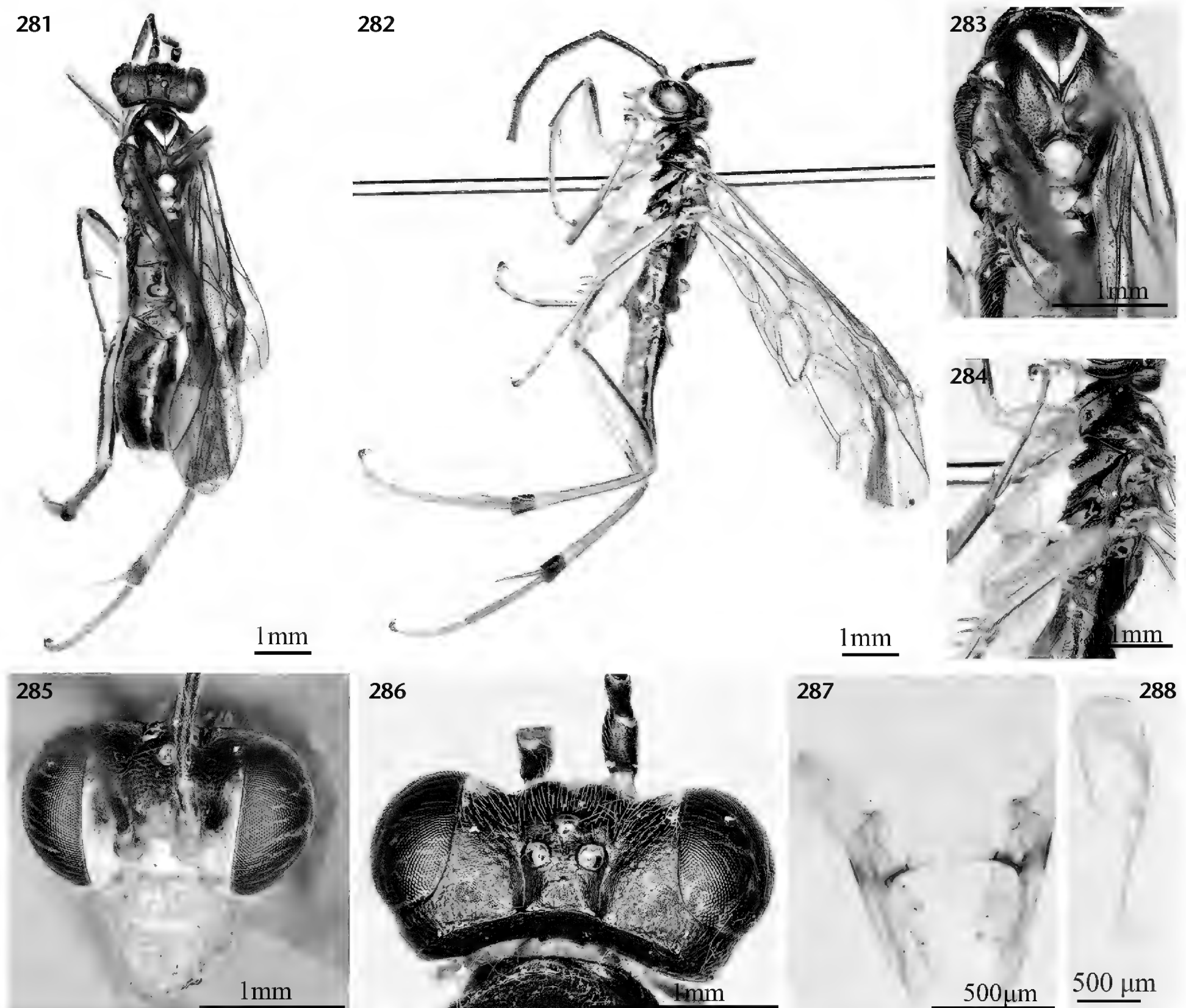
the *P. flavipes* group by the following characters: mesepisternum white, upper corner black; terga black, central part of each tergum with a white triangular spot; hind coxa reddish-brown, basal 1/3 of femur white, apical 2/3 reddish-brown, tibia and tarsus yellowish-brown, apex of them black; labrum clearly longer than wide, strongly acute toward apex; median fovea ditch-like, deeply extending to median ocellus; punctures on mesepisternum extremely minute, shallow, indistinct; antenna very slender.

Male (Figs 281–288). Body length 7.5 mm. Color and structure similar to female, except: tegula white except extreme apex, which is black; hind femur white, without red; outer part of coxa and femur, inner part of femur on apical 2/5 each with a black band; tibia with pale yellow ring near apex; antennomeres strongly compressed.



Figures 271–280. *Pachyprotasis acutilabria*, female: (271) dorsal view; (272) lateral view; (273) mesonotum and metanotum, dorsal view; (274) mesopleuron and metapleuron, lateral view; (275) head, frontal view; (276) head, dorsal view; (277) ovipositor sheath, lateral view; (278) lance; (279) lancet; (280) middle serrulae of lancet.





Figures 281–288. *Pachyprotasis acutilabria*, male: (281) dorsal view; (282) lateral view; (283) mesonotum and metanotum, dorsal view; (284) mesopleuron and metapleuron, lateral view; (285) head, frontal view; (286) head, dorsal view; (287) harpe and parapenis; (288) penis valve.

Variation. Body length of female 8.0–8.5 mm.

Distribution. China (Gansu, Henan, Hubei, Ningxia, Shaanxi).

Type material. Holotype, ♀, China, Henan province, Songxian, 33°54'N, 111°59'E, 19-VII-1996, Meicai WEI leg. (ASMN). Paratypes, 12♀, China, Henan province, Songxian, 33°54'N, 111°59'E, 19-VII-1996, Meicai WEI leg.; 2♀, China, Henan province, Luanchuan, 33°42'N, 111°44'E, 13–14-VII-1996, Meicai WEI leg. (ASMN).

Non-type material. 3♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1800 m, 2-VI-2001, Yihai ZHONG leg.; 2♀, China, Henan province, Neixiang, Mt. Baotian-

man, 33°30'N, 111°56'E, alt. 1600 m, 15-VII-1998, Meicai WEI; 4♀, China, Henan province, Xixia, Mt. Laojie, 33°37'N, 111°46'E, alt. 1500 m, 17–19-VII-1998, Meicai WEI & Maoling SHENG leg.; 1♀, China, Henan province, Luanchuan, Longyuwan, 33°42'N, 111°44'E, alt. 1000 m, 12-VII-1996, Xiaocheng SHEN leg.; 8♀, China, Henan province, Lushi, Forestry Farm Dakuaidi, 33°45'N, 110°59'E, alt. 1700 m, 20-VII-2001, Yihai ZHONG leg.; 8♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1650 m, 19–25-VII-2001, Jigang JIANG leg.; 2♀, China, Henan province, Luanchuan, Longyuwan, 33°42'N, 111°44'E, alt. 1300 m, 23-VII-2002, Jigang JIANG leg.; 7♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1500 m,

18–27-VII-2003, Yingke HE & Minwen LIANG leg.; 6♀, China, Henan province, Luanchuan, Longyuwan, 33°42'N, 111°44'E, alt. 1600 m, 29-VII-2003, Yingke HE & Minwen LIANG leg.; 49♀, China, Henan province, Luanchuan, Longyuwan, 33°42'N, 111°44'E, alt. 1600–1800 m, 20–21-VII-2004, Shaobing ZHANG & Weixing LIU leg.; 2♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1500 m, 22–24-VII-2003, Yingke HE leg.; 42♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1500–1600 m, 17-VII-2004, Weixing LIU leg.; 3♀1♂, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1854 m, 25-VI-2006, Qing YANG leg.; 1♂, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1854 m, 25-VII-2006, Qing YANG leg.; 11♀, China, Gansu province, Tianshui, Mt. Xiaolong, 34°16'N, 106°08'E, alt. 1409 m, 7-VII-2007, Meicai WEI & Mei NIE leg.; 1♀, China, Shaanxi province, Meixian, Mt. Taibai, 34°02'N, 109°26'E, alt. 1580 m, 12-VII-2007, Xiaoyu JIANG leg.; 3♀, China, Shaanxi province, Foping, Liangfengya, 33°41'N, 107°51'E, alt. 2128 m, 14-VI-2014, Liwei QI & Weinan KANG leg.; 7♀, China, Shaanxi province, Mt. Taibai, Forest Park Qingfengxia, 34°02'N, 109°26'E, alt. 1652 m, 11-VI-2014, Liwei QI & Weinan KANG leg.; 1♀, China, Shaanxi province, Meixian, Mt. Taibai, Kaitianguan, 107°54'E, 34°06'N, alt. 1852 m, 9-VI-2014, Mengmeng LIU & Ting LIU leg.; 1♀, China, Shaanxi province, Foping, Temple, 34°06'N, 107°54'E, alt. 1529 m, 20-VI-2014, Mengmeng LIU & Ting LIU leg.; 1♀, China, Shaanxi province, Meixian, Mt. Taibai, Duiwoping, 34°06'N, 107°54'E, alt. 1601 m, 6-VI-2014, Mengmeng LIU & Ting LIU leg.; 1♀, China, Hubei province, Mt. Shennongjia, Xiaolongtan, 31°15'N, 109°56'E, alt. 2100 m, 26-VI-2002, Yihai ZHONG leg.; 1♀, China, Hubei province, Mt. Shennongjia, 31°21'N, 110°34'E, alt. 2800 m, 22-VII-2003, Jigang JIANG leg.; 1♀, China, Hubei province, Mt. Shennongjia, Yazikou, 31°31'N, 110°20'E, alt. 1787 m, 3-VIII-2008, Fu ZHAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, Yazikou, 31°31'N, 110°20'E, alt. 1787 m, 10-VII-2016, Wei XIAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, Town Hongping, 110°26'E, 31°40'N, alt. 1867 m, 3-VIII-2008, Fu ZHAO leg.; 1♀, China, Hubei province, Mt. Shennongjia, 31°31'N, 110°20'E, alt. 2800 m, 22-VII-2003, Jigang JIANG leg.; 1♀, China, Ningxia Autonomous Region, Jingyuan, Mt. Liupan, Elonghe, 35°23'N, 106°18'E, alt. 1945 m, 5–6-VII-2008, Fei LIU leg.; 1♀, China, Ningxia Autonomous Region, Jingyuan, Mt. Liupan, Sutai, 35°23'N, 106°18'E, alt. 2133 m, 28-VI-2008, Fei LIU leg.; 1♀, China, Sichuan province, Chongzhou, Mt. Anzihe, Shaoyaogou, 30°46'N, 103°13'E, alt. 1580 m, 24-VI-2016, Kaiwen GAO leg. (ASMN, LSAF).

### *Pachyprotasis zhengi* Wei & Zhong, 2006

Figs 289–298

*Pachyprotasis zhengi* Zhong. & Wei, 2006: 621–622, figs 621, 622.

Diagnosis. Female. Body length 9.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: inner and hind orbit white; lateral

part of median mesoscutal lobe white; mesopleuron white, only mesopleural groove black, lower part of mesepisternum sometimes with a short and narrow black band, metapleuron entirely white; hind coxa to basal 2/5 of femur white, outer side of coxa and trochanter with narrow black stripes; apical 3/5 of femur, tibia and tarsus reddish-brown, extreme apex of tibia and tarsomere 5 black; punctures on dorsal part of head large and deep, on mesepisternum moderate.

Male. Unknown.

Variation. Body length of female 8.5–9.0 mm.

Distribution. China (Sichuan, Yunnan).

Type material. Holotype, ♀, China, Yunnan province, Deqin, Mt. Baima Snow, 28°28'N, 98°56'E, alt. 3500 m, 16-VII-2004, Hu ZHOU leg. (ASMN). Paratypes, 4♀, China, Yunnan province, Lijiang, Mt. Yulong Snow, 27°08'N, 100°12'E, alt. 2500 m, 15-VI-1996, Wenjun BU leg.; 1♀, China, Yunnan province, Lijiang, Mt. Yulong Snow, 27°08'N, 100°12'E, alt. 3000 m, 15-VI-1996, Leyi ZHENG leg.; 1♀, China, Yunnan province, Xianggelila, Xiaozhongdian, 27°48'N, 99°72'E, alt. 3000 m, 18-VII-2004, Hu ZHOU leg. (ASMN).

Non-type material. 1♀, China, Yunnan province, Xianggelila, Xiaozhongdian, 27°50'N, 99°40'E, alt. 3260 m, 11-VI-2009, Yihai ZHONG leg.; 1♀, China, Yunnan province, Lijiang, Mt. Yulong Snow, 27°08'N, 100°12'E, alt. 2945 m, 6-VI-2009, Meicai WEI leg.; 1♀, China, Sichuan province, Luding, Yanzhigou, 29°22'N, 102°00'E, alt. 2120 m, 2-VI-2009, Meicai WEI leg.; 1♀, China, Tibet Autonomous Region, Mangkang, 29°41'N, 98°36'E, alt. 3600 m, 5-VII-2013, Wei XIAO & Ya LI leg. (ASMN).

### *Pachyprotasis shengi* Wei & Nie, 1999

Figs 299–316

*Pachyprotasis shengi* Wei & Nie in Nie & We: 108–109, fig. 108.

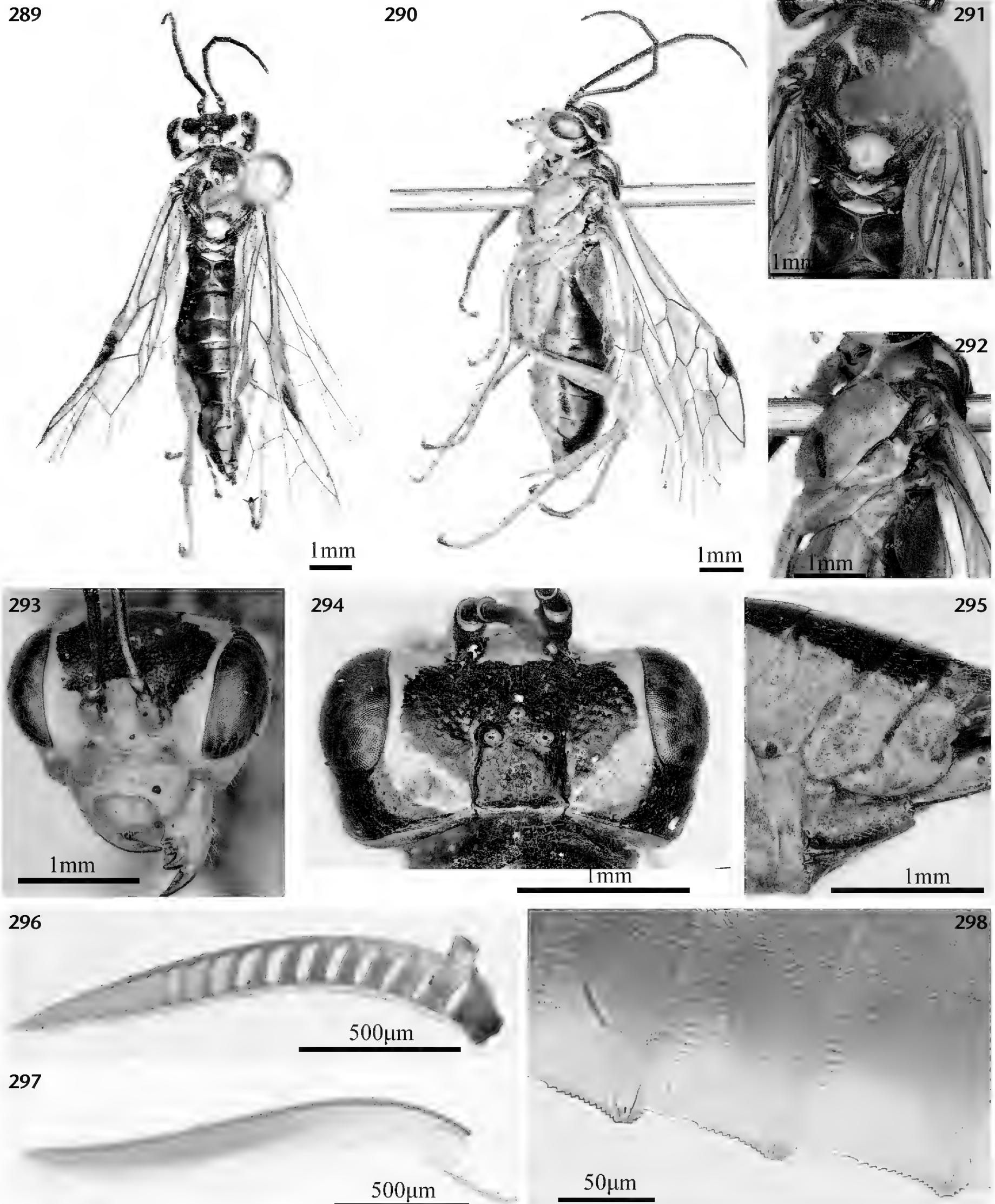
Diagnosis. Female (Figs 299–308). Body length 9.0 mm. This species is close to *P. weni* Wei in general appearance. In addition to the characters given in the key, the following characters are diagnostic: punctures on mesepisternum dense, distinct; sheath very slender, lancet sclerotic, pore lines subparallel with margin of lancet.

Male (Figs 309–317). Body length 7.5 mm. Color and structure similar to female, except: inner and outer part of hind femur both with black band on apical 3/5; antennomeres strongly compressed.

Variation. Body length of female 8.0–9.0 mm and male 7.0–7.5 mm.

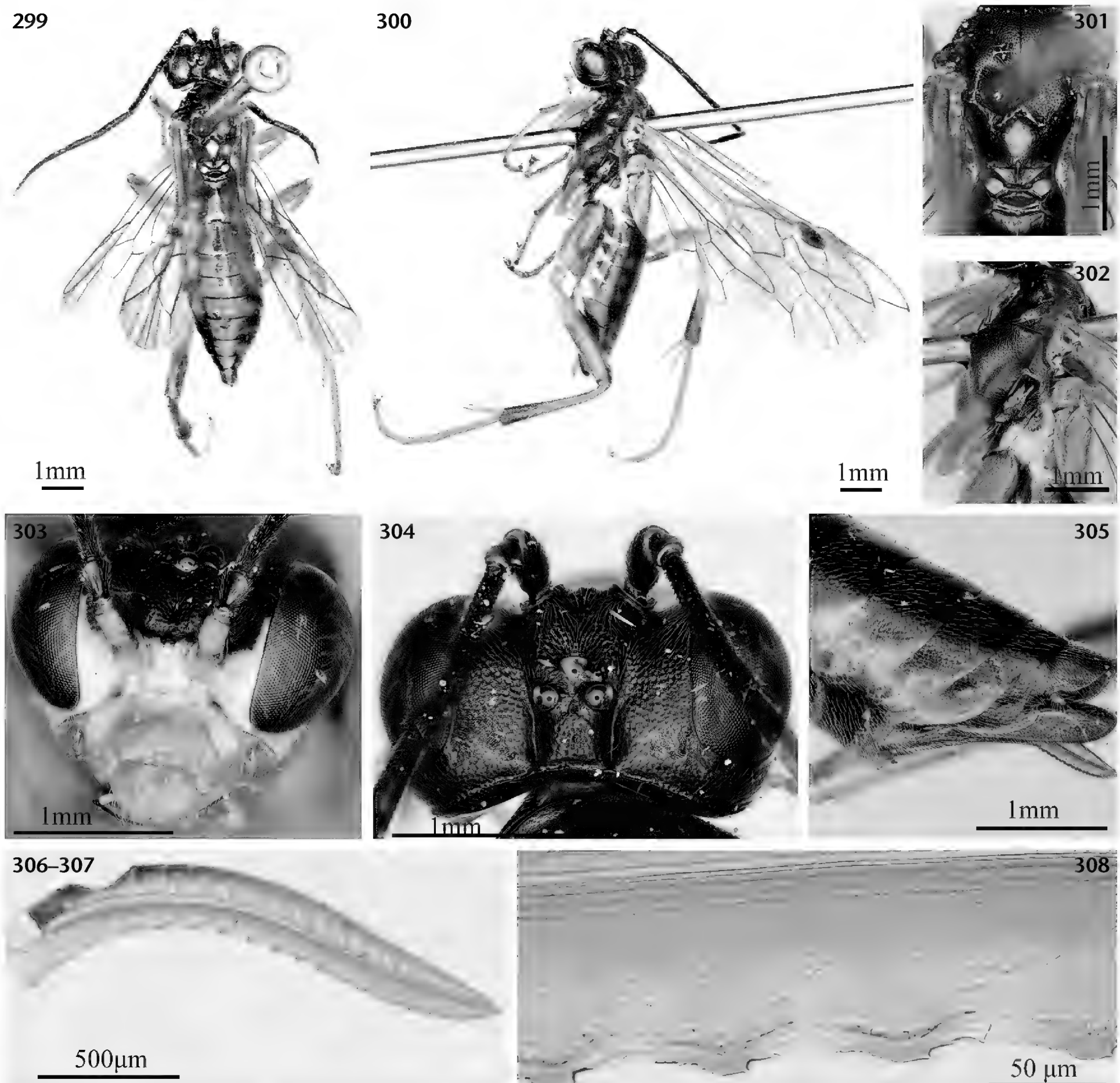
Distribution. China (Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan).

Type material. Holotype, ♀, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1300–1600 m, 15-VII-1998, Meicai WEI leg. (ASMN). Paratypes, 7♀6♂, China, Henan province, Neixiang, Mt. Baotianman, 33°30'N, 111°56'E, alt. 1300–1600 m, 12–15-VII-1998, Meicai WEI et. leg.; 5♀9♂, China, Henan province, Xixia, Mt. Laojieling, 33°37'N, 111°46'E,



Figures 289–298. *Pachyprotasis zhengi*, female: (289) dorsal view; (290) lateral view; (291) mesonotum and metanotum, dorsal view; (292) mesopleuron and metapleuron, lateral view; (293) head, frontal view; (294) head, dorsal view; (295) ovipositor sheath, lateral view; (296) lance; (297) lancet; (298) middle serrulae of lancet.



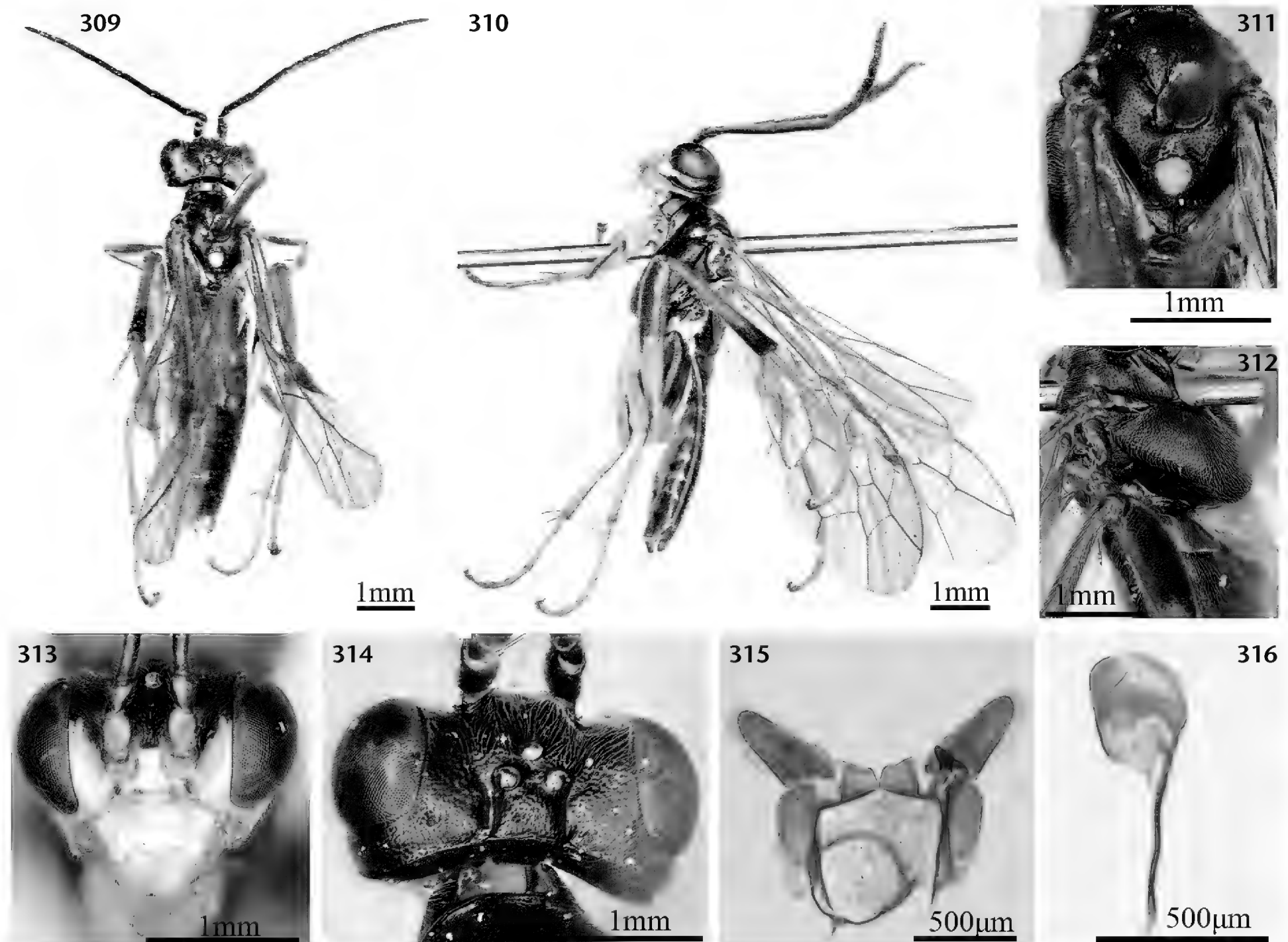


Figures 299–308. *Pachyprotasis shengi*, female: (299) dorsal view; (300) lateral view; (301) mesonotum and metanotum, dorsal view; (302) mesopleuron and metapleuron, lateral view; (303) head, frontal view; (304) head, dorsal view; (305) ovipositor sheath, lateral view; (306) lance; (307) lancet; (308) middle serrulae of lancet.

alt. 1500 m, 17–19-VII-1998, Maoling SHENG et. leg.; 1♀, China, Henan province, Songxian, 33°54'N, 111°59'E, 17-VII-1996, Jun WEN leg. (ASMN).

Non-type material. 20♀, China, Henan province, Lushi, Forestry Farm Dakuaidi, 33°54'N, 111°59'E, alt. 1700 m, 20-VII-2001, Yihai ZHONG leg.; 1♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1650 m, 25-VII-

2002, Jigang JIANG leg.; 1♂, China, Henan province, Songxian, Mt. Baiyunshan, 33°54'N, 111°59'E, alt. 1500 m, 19-VII-2003, Minwen LIANG leg.; 19♀, China, Henan province, Luanchuan, Longyuwan, 33°42'N, 111°44'E, alt. 1500–1800 m, 20–21-VII-2004, Shaobing ZHANG & Weixing LIU leg.; 3♀, China, Henan province, Songxian, Mt. Baiyun, 33°54'N, 111°59'E, alt. 1500–1600 m, 17-VII-2004, Shaobing ZHANG leg.; 5♀, China,



Figures 309–316. *Pachyprotasis shengi*, male: (309) dorsal view; (310) lateral view; (311) mesonotum and metanotum, dorsal view; (312) mesopleuron and metapleuron, lateral view; (313) head, frontal view; (314) head, dorsal view; (315) harpe and parapenis; (316) penis valve.

Henan province, Neixiang, Mt. Baotianman, 33°50'N, 111°56'E, alt. 1300–1900 m, 23–25-VII-2004, Weixing LIU leg.; 1♂, China, Shaanxi province, Foping, 33°32'N, 107°49'E, alt. 1450 m, 17-V-2005, Xun ZHU leg.; 1♂, China, Hubei province, Mt. Shennongjia, Town Hongqi, 31°40'N, 110°26'E, alt. 1867 m, 16-VII-2009, Fu ZHAO leg.; 1♀, China, Hunan province, Xinshao, Mt. Tianping, 27°16'N, 111°25'E, alt. 1500–1600 m, 16-VIII-1981, Xinwang TONG leg.; 1♀, China, Henan province, Mt. Badagong, 29°40'N, 109°44'E, alt. 1250 m, 13-VIII-2001, Jun WEN & Ningting HUANG leg.; 2♀, China, Sichuan province, Meishan, Mt. Emei, Jinding, 29°32'N, 103°33'E, alt. 3000 m, 18-VII-2001, Meicai WEI leg.; 3♀, China, Sichuan province, Meishan, Mt. Emei, 29°32'N, 103°33'E, 12-VIII-1980, Junhua HE leg.; 1♀, China, Sichuan province, Meishan, Mt. Emei, Chixixiang, 29°32'N, 103°20'E, alt. 2000 m, 19-VII-2001, Meicai WEI leg.; 1♀, China, Sichuan province, Meishan, Mt. Emei, Leidongping, 29°32'N, 103°33'E, alt. 2500 m, 18-VII-2001, Meicai WEI leg.; 7♀, China, Sichuan province, Kangding, Mt. Paoma, 30°01'N, 101°58'E, alt. 2500

m, 19-VII-2005, Wei XIAO & Hu ZHOU leg.; 7♀, 3♂, China, Sichuan province, Luding, Valley Hailuo, 29°22'N, 102°00'E, alt. 2200–2600 m, 15–17-VII-2003, Wei XIAO & Weixing LIU leg.; 1♀, 6♂, China, Sichuan province, Tianquan, River Laba, 30°01'N, 102°45'E, alt. 1800–2200 m, 12–13-VII-2003, Wei XIAO leg.; 7♀, China, Sichuan province, Meishan, Mt. Emei, Leidongping, 29°32'N, 103°33'E, alt. 2400 m, 26-VII-2006, Meicai WEI leg.; 1♀, China, Sichuan province, Meishan, Mt. Emei, Jinding, 29°32'N, 103°33'E, alt. 3076 m, 27-VII-2006, Meicai WEI leg.; 5♀, China, Sichuan province, Meishan, Mt. Emei, Hongchunping, 29°32'N, 103°33'E, alt. 1600 m, 4-VII-2006, Hu ZHOU & Yihai ZHONG leg.; 2♀, China, Sichuan province, Meishan, Mt. Emei, Xixiangchi, 29°32'N, 103°33'E, alt. 2000 m, 2-VII-2006, Hu ZHOU leg.; 4♀, 4♂, China, Sichuan province, Meishan, Mt. Emei, Jinding, 29°32'N, 103°33'E, alt. 3077 m, 13-VI-2007, Shaobing ZHANG & Yihai ZHANG leg.; 2♀, China, Sichuan province, Hongya, Mt. Wawu, Guoxianqiao, 29°42'N, 102°57'E, alt. 1075 m, 2-VII-2007, Fei LIU leg.; 20♀, 6♂, China, Sichuan province, Meishan,

Mt. Emei, Leidongping, 29°32'N, 103°33'E, alt. 2438–2458 m, 28–30-VII-2008, Deming WANG leg.; 70♀, 4♂, China, Sichuan province, Meishan, Mt. Emei, Leidongping, 29°32'N, 103°33'E, alt. 2350 m, 3–7-VII-2009, Meicai WEI et. leg.; 1♀, China, Sichuan province, Meishan, Mt. Emei, Leidongping, 29°32'N, 103°33'E, alt. 2350 m, 3–7-VII-2009 Deming WANG et. leg.; 10♀, 8♂, China, Sichuan province, Luding, Valley Hailuoguo, 29°22'N, 102°00'E, alt. 2200–2900 m, 2–3-VII-2009, Meicai WEI et. leg.; 1♀, 1♂, China, Sichuan province, Luding, Valley Yanzhi, 29°22'N, 102°00'E, alt. 2120 m, 2-VII-2009, Meicai WEI & Gengyun NIU leg.; 2♂, China, Sichuan province, Luding, Valley Hailuo, 29°22'N, 102°00'E, alt. 2120 m, 27–30-VI-2009, Yihai ZHONG leg.; 1♀, China, Sichuan province, Kunming, 25°03'N, 102°36'E, 20-VIII-1980, Junhua HE leg.; 4♀, China, Sichuan province, Hongya, Mt. Wawu, 29°22'N, 102°57'E, alt. 1920 m, 5–6-VII-2009, Meicai WEI & Zejian LI leg.; 6♀, 28♂, China, Sichuan province, Meishan, Mt. Emei, Xixiangchi, 29°32'N, 103°33'E, alt. 2059 m, 22-VII-2011, Junzhe XUE & Ping HU leg.; 27♀, China, Sichuan province, Meishan, Mt. Emei, Leidongpin, 29°32'N, 103°33'E, alt. 2430–2500 m, 27-VI–9-VIII-2016, Hannan WANG leg.; 2♀, China, Sichuan province, Shiqu, Menghuocheng, 28°53'N, 102°21'E, alt. 2591 m, 25-VII-2016, Hannan WANG leg.; 2♀, China, Sichuan province, Chongzhou, Mt. Anzhihe, Valley Shaoyao, 30°46'N, 103°21'E, alt. 1580 m, 4-VII-2016, Kaiwen GAO leg.; 1♀, China, Sichuan province, Aba, Mt. Wolong, Valley Longyingchang, 31°00'N, 103°12'E, alt. 2200 m, 4-VII-2016, Kaiwen GAO leg.; 1♀, China, Yunnan province, Temple Qiongzhu, 25°03'N, 102°36'E, 19-VIII-1988, Decheng YUAN leg.; 1♀, China, Yunnan province, Mt. Gaoligong, 24°49'N, 98°46'E, alt. 2500 m, 5–8-VII-2005, Shouzhu LIU & Yang LIN leg.; 1♀, China, Yunnan province, Lijiang, Mt. Yulong Snow, Maoniuping, 27°08'N, 100°12'E, alt. 3100 m, 24-VII-2004, Wei XIAO leg.; 37♀, 5♂, China, Yunnan province, Mt. Gong, Heiwadi, 27°46'N, 98°36'E, alt. 2100 m, 6–12-VI-2009, Wei XIAO & Yihai ZHONG; 6♀, 21♂, China, Yunnan province, Lijiang, Mt. Yulong Snow, 27°08'N, 100°12'E, alt. 2945 m, 6-VI-2009, Zejian LI leg. (ASMN).

### *Pachyprotasis maesta* Malaise, 1934

Figs 317–326

*Pachyprotasis maesta* Malaise, 1934: 465–466; Saini & Kalia, 1989: 152–153, figs 140, 145, 155, 166, 176; Saini, 2007: 80, figs 159, 163, 169, 176, 180, 196, 202.

**Diagnosis.** Female. Body length 8.0 mm. This species can be distinguished from other similar species of the *P. flavipes* group by the following characters: mesopleuron black, anterior part sometimes with a white spot; lateral part and apex of median mesoscutal lobe each with a white spot; terga black, without distinct white spot; hind legs reddish-brown, apex of femur and tibia black, coxa sometimes with black, without white; punctures on dorsal part of head and mesepisternum large, deep and distinct; median fovea pit-like, not extending to median ocellus.

Male. Unknown.

**Variation.** Body length of female 6.5–8.0 mm.

**Distribution.** China (Sichuan, Tibet, Yunnan), Burma, India.

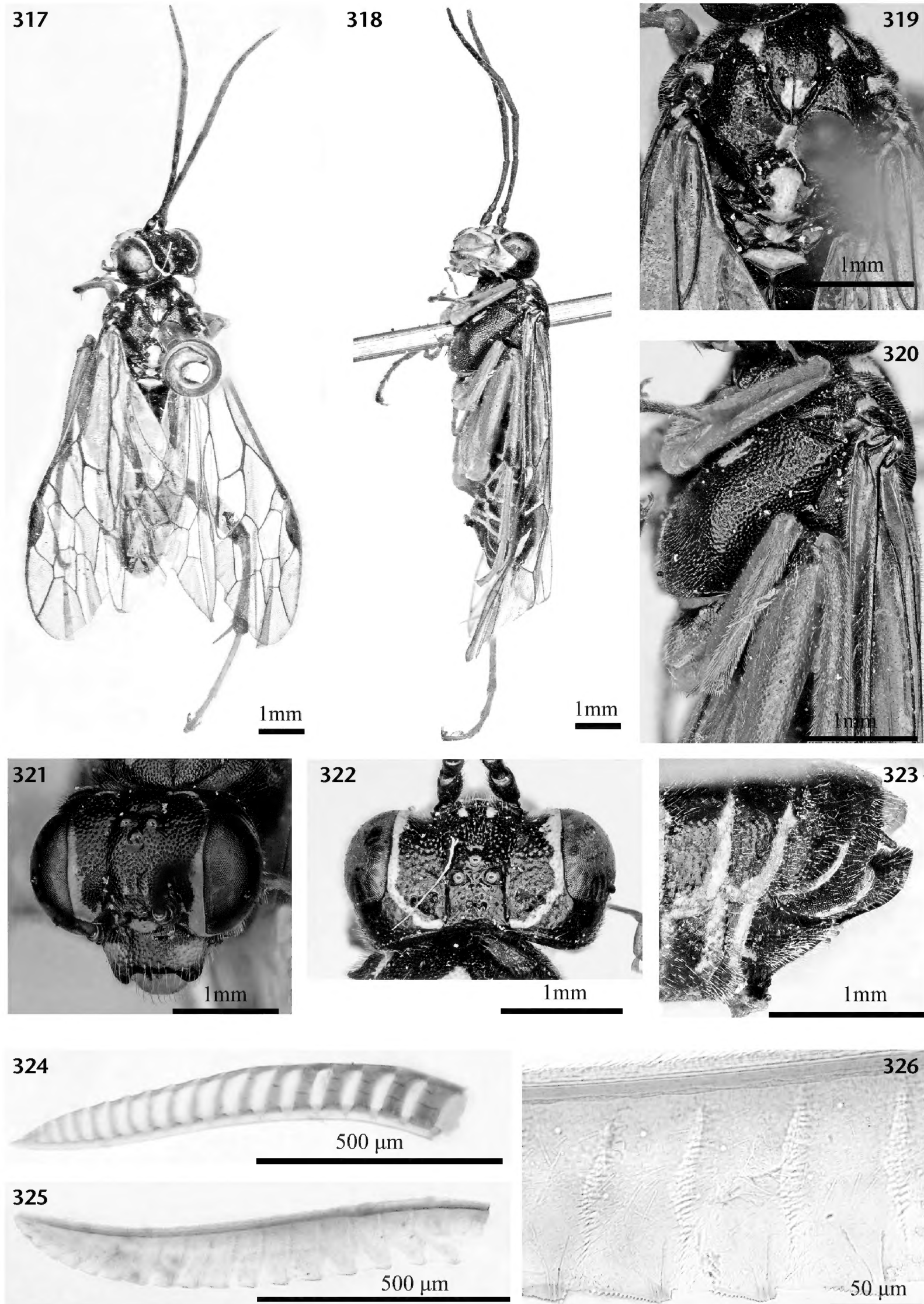
**Non-type material.** 1♀, China, Yunnan province, Lijiang, Mt. Yulong Snow, 27°08'N, 100°12'E, 11-VIII-1979, Jianming CUI leg.; 1♀, China, Yunnan province, Lijiang, Mt. Yulong Snow, Yongping, 100°12'E, 26°49'N, 7-VI-1996, Leyi ZHENG leg.; 1♀, China, Yunnan province, Lushui, Fengxueyakou, 26°00'N, 98°37'E, alt. 3500 m, 4-VI-2009, Yihai ZHONG leg.; 1♀, China, Yunnan province, Jingfu, Mt. Wuliang, Qincitang, 24°16'N, 100°42'E, alt. 2197 m, 14-VII-2006, Qing YANG leg.; 1♀, China, Yunnan province, Tianquan, River Laba, 30°01'N, 102°47'E, alt. 1800–2000 m, 12-VII-2003, Wei XIAO leg.; 2♀, China, Sichuan province, Luding, Valley Hailuo, 29°22'N, 102°00'E, alt. 2200 m, 3-VII-2009, Zejian LI leg.; 2♀, China, Yunnan province, Deqin, 29°22'N, 99°00'E, alt. 2120 m, 2-VII-2009, Blank & Liston & Teager leg.; 1♀, China, Yunnan province, Tengchong, 24°50'N, 98°46'E, alt. 2200 m, 2-VI-2009, Blank & Liston & Teager leg.; 1♀, China, Tibet Autonomous Region, Motuo, 29°42'N, 93°34'E, alt. 2750 m, 13-VII-2013, Wei XIAO & Tao LI leg. (ASMN).

## DISCUSSION

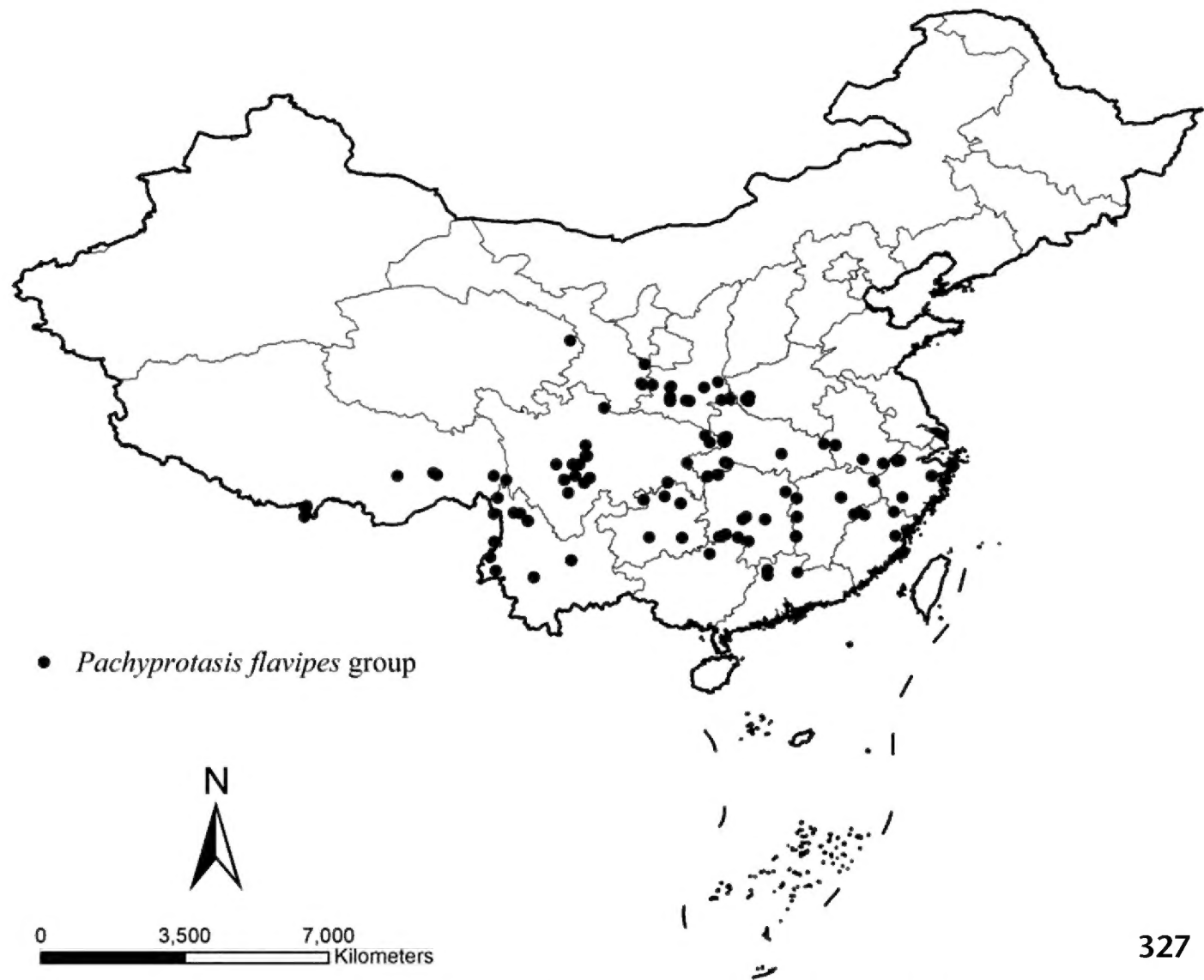
Thirty-four species of the *P. flavipes* group have been recognized (including two newly described species), one species (*P. variegata*) was found to be widespread throughout Europe and Siberia, twenty-five were originally described from China and Burma-Yunnan frontier: *P. variegata* (Fallén, 1808); *P. flavipes* (Cameron, 1902); *P. sanguinipes* Malaise, 1931; *P. maesta* Malaise, 1934; *P. citrinipicta* Malaise, 1945; *P. corallipes* Malaise, 1945; *P. subulicornis* Malaise, 1945; *P. subtilis* Malaise, 1945; *P. subtilissima* Malaise, 1945; *P. validicornis* Malaise, 1945; *P. acutilabria* Wei, 1998; *P. magnilabria* Wei, 1998; *P. parasubtilis* Wei, 1998; *P. rufinigris* Wei & Nie, 1998; *P. weni* Wei, 1998; *P. wui* Wei & Nie, 1998; *P. lineatifemorata* Wei & Nie, 1999; *P. shengi* Wei & Nie, 1999; *P. henanica* Wei & Zhong, 2002; *P. xanthotarsalia* Wei & Nie, 2003; *P. zuoae* Wei, 2005; *P. zhengi* Wei & Zhong, 2006; *P. longipetiolata* Zhong, Li & Wei, 2018; *P. rufodorsata* Zhong, Li & Wei, sp. nov. and *P. nigratarsalia* Zhong, Li & Wei, sp. nov.; thirteen from India: *P. flavipes* (Cameron, 1902); *P. maesta* Malaise, 1934; *P. citrinipicta* Malaise, 1945; *P. subulicornis* Malaise, 1945; *P. subtilissima* Malaise, 1945; *P. subtilis* Malaise, 1945; *P. validicornis* Malaise, 1945; *P. manaliensis* Singh, 1987; *P. ramgarhensis* Saini & Kalia, 1989; *P. mandalensis* Saini & Kalia, 1989; *P. punctulatis* Saini & Vasu, 1995; *P. cephalopunctata* Saini & Vasu, 1998; *P. kulwantae* Saini & Vasu, 1998; and four from Japan: *P. variegata* (Fallén, 1808); *P. shishikuensis* Togashi, 1963; *P. malaisei* Togashi, 1963; *P. sanguinitaris* Togashi, 1963.

The Chinese species of the *P. flavipes* group were mostly distributed (Fig. 327) in Anhui, Fujian, Henan, Hubei (Fig. 328), Hunan, Jiangxi, Shaanxi (Fig. 329), Sichuan, Tibet, Yunnan and Zhejiang provinces, and were rarely found in regions with high temperature, such as Hainan, Taiwan, Guangdong, and Guangxi





Figures 317–326. *Pachyprotasis maesta*, female: (317) dorsal view; (318) lateral view; (319) mesonotum and metanotum, dorsal view; (320) mesopleuron and metapleuron, lateral view; (321) head, frontal view; (322) head, dorsal view; (323) ovipositor sheath, lateral view; (324) lance; (325) lancet; (326) middle serrulae of lancet.



Figures 327–329. (327) Distribution of the *Pachyprotasis flavipes* group in China; (328–329) habitats of *Pachyprotasis* species: (328) Mt. Taibai in Mei County, Shaanxi province; (329) Mt. Shennongjia in Yichang City, Hubei province, China.

Zhuang Autonomous Region. Judging from the geographical distribution map, species of the *P. flavipes* group are suitable for survival in the humid and cold climate in Mts Qingling of China.

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